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The Effect of a Gratitude Intervention on Subjective Well-Being in a UK Sample: The Role of Self-Esteem.

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Abstract

In the last decade, the discipline of positive psychology has developed a substantial number of interventions that are focused on increasing people's happiness. There is evidence that interventions based on practising gratitude may enhance subjective well-being.

To date, however, there are mixed findings regarding the efficacy of gratitude interventions. This Internet study investigated the effectiveness of a 3-day gratitude intervention programme based on the count-your-blessings approach on a sample of UK adults ($N = 60$). The outcome measure of the tested intervention was subjective well-being (SWB). Participants were measured at six points in time: before the intervention (Day 1), immediately after the intervention on each day (Day 2, Day 3, Day 4), one day after the 3-day gratitude intervention (Day 5), and at 1-week follow-up (Day 12). The results revealed that the gratitude intervention enhanced satisfaction with life and decreased negative affect in participants, and this positive effect of practising gratitude on SWB persisted over 1-week. In addition, the given intervention also momentarily increased individuals' positive affect on Day 2. Interestingly, further analyses showed that the participants with low and average levels of self-esteem benefited the most from the gratitude intervention, regarding their satisfaction with life on Day 12 and negative affect on Day 5. Therefore, psychologists should stay sensitive to self-esteem as a moderator in future research. Theoretical and practical implications of these findings are discussed.

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I would like to dedicate this dissertation to my parents, Jadwiga and Jerzy.

Declaration

I have read and understood The University of Edinburgh guidelines on Plagiarism and declare that this written dissertation is all my own work except where I indicate otherwise by proper use of quotes and references.

Signed

Date

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Introduction

The Aims of Positive Psychology

In the last century, psychologists have primarily concentrated on studying mental illness. Particularly after World War II, the other aims of psychology (such as increasing individuals' well-being and nurturing human talent) were almost entirely forgotten (Magyar-Moe, 2009). This focus on psychopathology was understandable given the high number of people left after the war with various psychological problems. However, as a result of focusing on curing mental illness, psychotherapists implemented a disease model of patient functioning that overlooked individual virtues, strengths, and well-being. In 1998 Martin Seligman in his presidential speech to the American Psychological Association asked psychologists to come back to their roots, and not only focus on pathologies but also on human well-being (Seligman & Csikszentmihalyi, 2000). Since then, psychologists have started to believe that concentrating only on peoples' disorders does not necessarily increase well-being, and happiness should be also pursued in psychotherapy (Rashid, 2009).

Positive psychology is used in literature as an umbrella term for studying positive emotions, positive character traits, and positive institutions (Seligman, Steen, Park, & Peterson, 2005). Positive psychology research aims to complement, not to replace, the existing knowledge about human disorders and psychological distress. The main aim is to develop a balanced scientific understanding and a more complete view of human experience. Positive psychologists believe that

psychology as a complete science should focus on suffering and happiness, as well as the interaction between them in order to both relieve suffering and increase well-being (Seligman et al., 2005).

Positive psychology proposes that human strengths can protect against mental disorders and increase subjective well-being. Peterson and Seligman (2004) have developed the “Classification of 6 Virtues and 24 Character Strengths” to describe virtues and strengths that enable people to thrive. Every virtue, such as courage, humanity, justice, temperance, transcendence, and wisdom, consists of four specific character strengths. These character strengths include gratitude, forgiveness, open-mindedness, creativity, and kindness (Peterson et al., 2004).

In the last decade, research in the area of positive psychology has flourished. The *Journal of Positive Psychology* was established in 2008 to accommodate some of the rapidly growing research on well being, positive emotions, and character strengths. Today, a variety of scientific books are dedicated exclusively to positive psychology, and it is being taught at around 100 universities and colleges, mostly in the USA. Furthermore, several universities offer a Master’s degree that can be completed in applied positive psychology. Professional organisations, such as the Positive Psychology Section of the Society of Counselling Psychology within the American Psychological Association, devoted to the discipline of positive psychology have also been established (Magyar-Moe, 2009).

However, there is still much to be explored in order to fully understand what positive psychology can offer. According to Seligman and Csikszentmihalyi (2000), the time has come to study mental health as psychologists’ knowledge of what makes people happy is still lacking, in comparison to the progress that has already been made in understanding mental illness.

Positive Psychological Interventions

An important goal of positive psychology is to increase peoples' happiness through Positive Psychology Interventions (PPIs). PPIs are defined in literature as intentional activities or treatment methods, designed in order to enhance positive feelings, cognitions, or behaviours (Sin & Lyubomirsky, 2009). PPIs are diverse and include practising optimistic thinking, writing gratitude letters, or learning how to identify one's own strengths. Positive interventions complement traditional psychological interventions (e.g. psychotherapy) that are usually focused on repairing what is problematic with patients (Magyar-Moe, 2009). According to Seligman (2002), "treatment is not just fixing what is wrong; it is also building what is right."

Lyubomirsky, Sheldon, and Schkade (2005) included intentional activities in their proposed "Model of Sustainable Happiness." According to this model, a person's chronic happiness level is determined by three factors, namely: the "set point" (50%), "life circumstances" (10%), and "intentional activity" (40%). By intentional activities the researchers mean discrete interventions, practises, or actions in which individuals can choose to engage. This is how intentional activities can be distinguished from life circumstances. According to Lyubomirsky et al. (2005), "circumstances *happen* to people, and activities are ways that people *act* on their circumstances" (p. 118). As it would be difficult to change one's life circumstances or genetic influences (the "set point"), changing individual's intentional activities offers the most promising route to sustainable increases in SWB. A distinction can be made between behavioural (e.g. physical exercise), cognitive (e.g. counting one's blessings), and motivational (e.g. setting personal goals) categories of intentional activities. Recent work has indicated that intentional activities offer very promising effects. For instance, practising positive psychological virtues and character strengths, such as gratitude (e.g., Emmons &

McCullough, 2003), or forgiveness (e.g., McCullough, Pargament, & Thoresen, 2000) has been found to enhance SWB. As these activities are generally controlled by the individual, they may offer the best opportunity to increase and sustain people's happiness (Lyubomirsky et al., 2005).

However, studies examining the effectiveness of PPIs have shown mixed results. Some researchers have found that "positive psychotherapy" (practising a package of several different PPIs) notably boosted well-being and decreased depressive symptoms in participants (e.g., Seligman, Rashid, & Parks, 2006; Fava, Ruini, Rafanelli, Finos, Salmaso, Mangelli, et al., 2005). Similarly, other studies examining PPIs have found positive effects of practising some character strengths, such as gratitude, forgiveness, and mindfulness on SWB (e.g., Chan, 2010; Freedman & Enright, 1996; Bedard, Felteau, Mazmanian, Fedyk, Klein, Richardson, et al., 2003). In contrast, some studies have not found practising PPIs to be advantageous overall, in comparison to control or placebo groups (e.g., Sin, Della Porta, & Lyubomirsky, 2009; Sheldon & Lyubomirsky, 2006). For instance, a recent study by Sin, Della Porta, and Lyubomirsky (2009) showed that writing gratitude letters once a week for a period of eight weeks did not produce increases in well-being for all participants. Only participants who were motivated to become happier showed enhanced SWB. Therefore, future research needs to examine further which PPIs work and what factors mediate/moderate their influence on SWB measures or other outcomes of interest. A goal of the present research is to examine whether a specific PPI, a gratitude intervention, is effective in increasing SWB outcomes, and to determine whether self-esteem moderates the relationship between the gratitude intervention and SWB measures. Further examination of the effectiveness of specific PPIs in future research will ensure which positive interventions really work, and more importantly, will explore *how* they work.

Gratitude as a Parent of all Virtues

The meaning of gratitude

“Gratitude unlocks the fullness of life. It turns what we have into enough, and more. It turns denial into acceptance, chaos into order, confusion into clarity. It turns problems into gifts, failures into success, the unexpected into perfect timing, and mistakes into important events. Gratitude makes sense of our past, brings peace for today and creates a vision for tomorrow”.

Melodie Beattie

Gratitude has been defined in the literature as an emotion, a moral virtue, an attitude, a personality trait, and a coping style (Lopez & Snyder, 2003). Gratitude is also defined as one of 24 character strengths related to the domain of transcendence (Peterson et al., 2004). The word “gratitude” originates from the Latin word *gratia* which means grace or gratefulness (Lopez & Snyder, 2003). According to Emmons (2007), all words derived from the word *gratia* are associated with “kindness, generousness, gifts, the beauty of giving and receiving, or getting something for nothing” (p. 4).

Throughout history, gratitude has received a central position in many philosophical and religious theories. Religions such as Buddhism, Judaism, Islam, and Christianity have acknowledged the significance of gratitude (Emmons & Crumpler, 2000). However, in spite of this recognised importance of gratitude, the study of gratefulness has tended to be disregarded by psychology (McCullough,

Kilpatrick, Emmons, & Larson, 2001). This abandonment might be part of the more general negligence by researchers to the study of the positive aspects of human life, and a general lack of attention paid to positive character strengths before the emergence of positive psychology (Linley & Harrington, 2006). However, this is now changing with more and more articles on the topic of gratitude being published in the last decade (e.g., Emmons & McCullough, 2003; Sheldon & Lyubomirsky, 2006; Wood, Joseph, & Linley, 2007).

Gratitude is a feeling of thankfulness and appreciation for received benefits. Gratitude may be given interpersonally (to another person) or transpersonally (e.g. to nature, to God). However, one cannot direct it towards the self (Lopez & Snyder, 2003). Gratefulness given interpersonally can be described as a willingness to acknowledge a valuable outcome received from another person's kindness. There is also recognition that the other person purposely provided this benefit, usually at some individual cost (Emmons, 2007). According to Emmons (2007), "being grateful is an acknowledgement that there are good and enjoyable things in the world" (p. 5). What is more, people can experience gratitude that comes from non-human events or actions. For instance, most people feel grateful for surviving very traumatic events or managing crises (Coffman, 1996). Peterson and Seligman (2003) found that many individuals reported increased gratefulness and life appreciation following traumatic exposure to terrorist attacks.

Grateful individuals perceive their existence as a gift, and they often feel more satisfaction than deprivation in life (Emmons, 2007). Emmons and McCullough (2003) found that gratitude has many benefits. These include: psychological, such as increased positive affect, attentiveness, more energy, and enthusiasm; physical, such as fewer illnesses, better sleep, and increased exercise; and interpersonal benefits, such as feeling less lonely and more connected.

In summary, gratitude is associated with an appreciation of other individuals or things that are usually overlooked in day-to-day life. Being

thankful for large or small things that other people have done for us is a way to increase the gratitude felt in one's life (Snyder & Lopez, 2007). Indeed, according to Cicero (106-43 BC) "gratitude is not only the greatest of the virtues, but the parent of all of the others".

Gratitude as a disposition versus state

Gratitude has been conceptualised in literature at both state and trait (disposition) levels (e.g. Emmons, McCullough, & Tsang, 2003; Watkins, Woodward, Stone, & Kolts, 2003). As a state, gratitude can be defined as a subjective feeling of wonder, gratefulness, and appreciation for outcomes received. As a trait, gratitude can be described as an individual predisposition to experience in life the state of gratitude (Chan, 2010).

Although people of a grateful disposition may not experience gratitude at any given moment, they are more likely than others to feel thankfulness in particular situations (Chan, 2010). McCullough, Emmons, and Tsang (2002) distinguished four facets of trait gratitude: intensity, frequency, span, and density. According to the authors, grateful individuals may experience thankfulness more intensely during the occurrence of positive events, and may report gratefulness more frequently throughout the day. Grateful people may also feel thankful in greater number of life circumstances (e.g. thankful for their jobs, their families, and their health) and may experience gratitude in their life with higher density (towards more people). Gratitude at the trait level has been examined using the Gratitude Questionnaire (GQ-6; McCullough et al., 2002), or the Gratitude, Resentment, and Appreciation Test (GRAT; Watkins, Porter, & Curtis, 1996). According to Watkins (2004), the GQ-6 appears to have excellent psychometric

properties, including a strong one-factor structure, and high internal consistency ($\alpha = .82$). Although the GRAT also has good psychometric properties, including strong validity and internal consistency ($\alpha = .92$), the GQ-6 has been recognised as the most commonly used measure of dispositional gratitude in previous research (e.g. Chan, 2010; Wood, Joseph, & Maltby, 2009; McCullough, Tsang, & Emmons, 2004).

It is also possible to measure gratitude at the state level. To assess state gratitude McCullough et al. (2002) developed the Gratitude Adjectives Checklist (GAC) which consists of three adjectives (*appreciative, grateful, and thankful*), and measures the amount of time individuals spent experiencing the feeling of gratitude. The GAC has been demonstrated to be a valid and reliable scale in both adult and adolescent samples. McCullough et al. (2002) found this measure to have good psychometric properties, including strong internal consistency ($\alpha = .87$).

Gratitude Interventions

Several interventions have been developed to foster gratitude in individuals. Specific interventions include writing gratitude letters or keeping gratitude journals (e.g. Seligman, Steen, Park, & Peterson, 2005; Emmons & McCullough, 2003; Chan, 2010).

Perhaps, one of the most widely used gratitude interventions in previous positive psychology research is the “three blessings” exercise. This strategy requires individuals to count their blessings (daily or weekly) in order to increase the experience of gratefulness in their life. Participants are often given a *Gratitude Journal* where they can keep a record of their blessings. For example, in a daily version of this exercise, individuals are asked to write in their journal about three

things that they are grateful or thankful for in the past day. This gratitude intervention is based on the assumption that many people find it easier to focus on negative rather than on positive things in life. According to positive psychologists, this tendency to concentrate on the negative whilst overlooking the positive aspects of life is a bias in people's thinking. Focusing on things that we are grateful for helps people to experience greater life satisfaction and more positive emotions, while building on human strengths, such as gratitude and optimism (Magyar-Moe, 2009). Although the above gratitude intervention is thought to enhance SWB, findings to date are limited, and further research is required to investigate the effectiveness of this exercise.

Another common intervention is a "gratitude visit". This strategy is based on writing and delivering a letter of gratitude and is thought to increase the feeling of thankfulness in individuals. In the "gratitude visit" intervention, people are asked to think about a person whom they have never thanked for a very special kindness. Next, they are instructed to write a letter of gratitude to that person in order to express their thankfulness and appreciation for received benefit. Finally, individuals are asked to deliver their letter of gratitude (in person) to the initially chosen recipient (Seligman, Rashid, & Parks, 2006). The "gratitude visit" exercise is based on the assumption that, although people may say 'thank you' frequently, they often fail to express the real depth of their gratefulness to other individuals. This intervention aims to encourage people to truly demonstrate the feeling of thankfulness for received goods (Rashid, 2009).

Other ways to increase the experience of gratitude are also evident in the literature. Miller (1995) proposed a cognitive-behavioural approach that enables individuals to learn gratitude through completing four simple steps: (a) identifying non-grateful thoughts; (b) creating gratitude-supporting thoughts; (c) replacing the non-grateful feelings with the gratitude-supporting feelings; (d) and converting the inner feelings into action. Another way to boost an individual's feeling of gratitude is proposed by Naikan therapy (Reynolds, 1981; Krech, 2001).

In this Japanese meditation technique, a person learns how to meditate on gratitude-related questions: “What did I receive?”, “What did I give?”, “What troubles and difficulties did I cause to others?” (Reynolds, 1981). The gratitude meditation is designed to help individuals to bring more gratitude in daily life and to motivate them to reciprocate.

Effectiveness of gratitude interventions

Interventions that encourage people to experience more gratitude can be successful in therapeutic contexts. Emmons and McCullough (2003) conducted one of the earliest studies examining the effectiveness of a gratitude intervention on physical, psychological and subjective well-being (SWB). The authors carried out three experiments as a part of a randomized, longitudinal study on a US sample. In the first two experiments, undergraduate students were randomly allocated to one of three experimental conditions: gratitude condition, hassles condition, and either neutral life events condition (experiment 1) or social comparison condition (experiment 2). Next, participants were asked to keep a weekly (experiment 1) or daily (experiment 2) record of their mood (positive and negative affect), health behaviours, coping behaviours, physical symptoms, and life appraisals for the period of two weeks. In the third experiment, individuals with neuromuscular disease were allocated to the gratitude condition or to the no-treatment control condition. In all three experiments participants were given the same instructions. In the gratitude condition they were asked to list five things that they were grateful/thankful for. In the hassles condition, they were instructed to write down five hassles that occurred in their life. Participants in the neutral

life events condition were asked to list five events that had an impact on them. Finally, in the social comparison condition, individuals were required to think about five ways in which they are better than others. Gratitude was measured daily (study 1 and 3) or weekly (study 2) and only at the state level, using the Gratitude Adjectives Checklist (GAC; Emmons & McCullough, 2003).

In the first experiment, participants randomly assigned to the gratitude condition were more optimistic, spent more time exercising, and reported less physical symptoms than individuals in hassles condition. However, the gratitude exercise did not have an impact on global positive and negative affect. This may have been because the first experiment asked participants to perform the gratitude exercise only once per week. Perhaps the results would have been different if the gratitude intervention was performed more often. The second experiment examined this possibility and participants were asked to practise the assigned gratitude exercise every day for a period of two weeks. The more intensive procedure of practising gratefulness in the second experiment resulted in more beneficial outcomes than in the first experiment. The second experiment found that participants in the gratitude condition reported higher levels of positive affect and state gratitude, relative to individuals in the hassles condition. Finally, the third experiment was conducted to test whether these results could be replicated in a group of patients with neuromuscular disease. In addition, the experimental period was extended to three weeks. As in the second experiment, the daily gratitude induction increased the level of positive affect in participants in the gratitude condition, relative to individuals in the control condition. As in the first experiment, the gratitude intervention affected individuals' life appraisals and state gratitude. Participants in the gratitude condition were more optimistic and more connected to other people. In addition, they also reported decreased negative affect.

Further analyses revealed that state gratitude completely mediated the relationship between the gratitude intervention and positive affect in the second

and third experiments. This finding suggests that the observed benefits of the gratitude exercise on positive affect resulted from the gratitude induction.

This study provides evidence that focusing on one's blessings instead of concentrating on daily hassles or complaints is much more beneficial for an individual, in terms of physical, psychological, and subjective well-being. Emmons and McCullough (2003) also show that this particular gratitude intervention brings more positive effects when one practises it daily. Nevertheless, it is uncertain whether the gratitude intervention based on count-your-blessings approach is an effective strategy when compared to more neutral control conditions. The gratitude intervention was found to be beneficial in comparison to the hassles condition in the first two experiments. Only the third experiment (on patients with neuromuscular disease) provided evidence that this specific intervention can increase patient's well-being in comparison to the no-treatment control condition. Thus, further studies examining the effect of a gratitude intervention on well-being in comparison to a control condition are required.

The effectiveness of the gratitude intervention based on listing one's blessings has been supported in later studies with the use of different control groups (e.g. Lyubomirsky, Tkach, & Sheldon, 2004; Seligman, Steen, Park, & Peterson, 2005; Chan, 2010). For instance, Lyubomirsky, Tkach, and Sheldon (2004) investigated two happiness-enhancing interventions on a US sample of undergraduate students. In one experiment, the authors tested the effectiveness of a gratitude intervention on SWB. The outcome variable was positive and negative affect, measured by the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Students were asked to count their blessings either once a week (Group 1) or three times a week (Group 2), for a period of six weeks. The control group (Group 3) completed only the SWB measures immediately before the gratitude intervention, and immediately after.

The results revealed that the increases in subjective well-being were observed only among individuals who performed the gratitude exercise once a

week relative to the no-treatment control group. Perhaps counting blessings more often led students to become bored with this exercise and find it less meaningful over time.

Importantly, Lyubomirsky et al. (2004) provided evidence that counting one's blessings is also beneficial when compared to no-treatment control group. This study revealed that the frequency of happiness-enhancing interventions is very important. Individuals benefit more from gratitude intervention if they count their blessings once a week than on a daily basis. However, this finding contradicts the previous results provided by Emmons et al. (2003) who found that it is more beneficial to list blessings on a daily basis. Given these mixed findings, further research is required to determine whether daily or weekly gratitude interventions are most effective in enhancing well-being.

In another related study, Seligman, Steen, Park, and Peterson (2005) examined a large sample of US participants (411 adults) to find whether the effectiveness of the gratitude intervention persists over longer periods of time. The researchers compared the effects of five different positive psychology interventions on happiness and depressive symptoms. These interventions included one gratitude exercise ("gratitude visit"), two exercises focused on increasing one's awareness of positive aspects in life ("three good things", "you at your best"), and two exercises focused on identifying character strengths ("using signature strengths in a new way", "identifying signature strengths"). The control group completed the placebo control exercise ("early memories") where individuals were instructed to write about the earliest memories of their childhood. The entire study was conducted via the Internet. Participants were randomly allocated to one intervention, and they were instructed to perform the assigned exercise every day for a period of one week. The instructions differed only in a case of the "gratitude visit" intervention, where participants had one week to write and deliver a letter of gratitude to a chosen person.

All individuals were given the measures of happiness (assessed by the

Steen Happiness Index; Steen, Park, & Peterson, 2005) and depression (assessed by the Center for Epidemiological Studies-Depression Scale; Radloff, 1977) at six different points in time (at pre-test, post-test, one week after the post-test, one month after the post-test, three months after the post-test, and six months after the post-test). Only participants who completed the whole experiment (71%) were included in data analysis. However, the researchers noted that individuals who dropped out earlier did not score differently on happiness and depression questionnaires in comparison to participants who completed the entire study. Further, at the end of the follow-up period all individuals were asked whether they continued practising the assigned exercise for more than one week. The researchers hypothesized that continued practise of the positive psychology exercise would contribute to better outcomes and more long-term effects.

The results showed that the “gratitude visit” exercise caused the greatest positive changes in participants (in enhancing happiness and reducing depressive symptoms) but these changes lasted only for a period of one month. In addition, two positive psychology exercises – “using signature strengths in a new way” and “three good things” increased happiness and decreased depressive symptoms in individuals for a period of six months. Interestingly, individuals did not start benefiting from these two interventions until one month after practising them. This finding reveals the importance of follow-up study when examining positive psychology interventions.

Although the “gratitude visit” was the most powerful intervention in the whole study, it is interesting to consider why the positive effects of this exercise did not persist over one month time. Participants were asked to perform this exercise only once whereas other exercises were completed on a daily basis. It is possible, that writing just one gratitude letter was not enough to lead to lasting increases in happiness. It would be useful to examine the effectiveness of the “gratitude visit” intervention in longer than a one-week study.

Another limitation of this study is that it was conducted on a convenient,

internet sample. Participants were informed that the main goal was to increase their happiness, although this was not guaranteed. Therefore, these highly motivated individuals may not be a representative sample. Participants expected to become happier, and this might have masked the actual results of the study.

Recently, Chan (2010) investigated the effects of a gratitude intervention on occupational burnout and SWB in a sample of Chinese school teachers. In comparison to the study by Seligman et al. (2005), individuals were not informed about the real purpose of the experiment. Instead, participants were told that the research was “an eight-week self-improvement project on self-reflection for enhanced self-awareness” (Chan, 2010, p. 142). The study examined gratitude at both disposition and state levels. The SWB variables included satisfaction with life (assessed by the SWLS; Diener, Emmons, Larsen & Griffin, 1985), and positive and negative affect (measured by the PANAS; Watson, Clark, & Tellegen, 1988). First, dispositional gratitude of Chinese teachers was assessed using the GQ-6 (McCullough et al., 2006), and its associations with teacher burnout and orientations to happiness were evaluated. Secondly, the effect of an eight-week gratitude intervention programme on SWB was examined. All school teachers experienced the gratitude intervention – there was no control condition. Participants were instructed to list three things that they were grateful for each week for a period of eight weeks. At the end of each week, they were asked to consider why these good events had happened to them using Naikan-meditation questions (“What did I receive?”; “What did I give?”; “What more could I do?”). It was believed that meditation with these three questions “could foster the recognition of human interdependence, leading to the realisation of how much we have received from others, how much gratitude is due them and how little we have demonstrated this gratitude” (Chan, 2010, p. 141). Participants were assessed at only two points in time (before and after the 8-week intervention programme). The entire study was conducted online.

Results showed that practising gratitude exercise once a week for the

period of eight weeks contributed to an increase of gratitude at the state level and enhanced SWB (positive affect and life satisfaction). There were no changes in negative affect following the experimental manipulation. Interestingly, the authors compared the effectiveness of the gratitude intervention on participants with different levels of dispositional gratitude. Median split was used to differentiate high and low grateful teachers. Results revealed that positive effects of the gratitude intervention were more prominent for less grateful teachers. In other words, less grateful teachers benefited more from the gratitude intervention than more grateful teachers. One interpretation of this finding might be that it was hard to increase the feeling of gratitude in teachers who were already very grateful. Surprisingly, further analyses revealed that high dispositionally grateful teachers showed decreased state gratitude at the post-intervention assessment. According to Chan (2010), it is possible that an attempt to increase the feeling of gratitude in high dispositionally grateful teachers caused heightened feeling of indebtedness. The experience of indebtedness has also been associated with negative affect in previous research (e.g. Watkins, Scheer, Ovnicek, & Kolts, 2006). Therefore, it is possible that exceptionally high levels of dispositional gratitude may have detrimental effects.

This study is particularly interesting as it examined influences of both state and trait gratitude. It suggests that, the possibility of differential effects of a gratitude intervention for grateful and less grateful participants needs to be considered in future research. However, one major limitation of the study was a lack of a control group. In addition, participants were measured only at two points in time (before and after the intervention). The research by Seligman et al. (2005) highlighted the importance of follow-up study when testing the effectiveness of positive interventions, as some effects may not be observable at the first post-intervention assessment. However, despite these limitations, this study provided evidence that the current gratitude intervention was effective in increasing feelings of gratitude that led to enhanced SWB, but only in low

dispositionally grateful participants.

A number of studies have not found gratitude interventions to be effective in enhancing SWB (or happiness). Sheldon and Lyubomirsky (2006) investigated the emotional outcomes and motivational predictors of practising two positive psychology interventions. The US undergraduate students were randomly assigned to one of the three study conditions: (a) a gratitude intervention; (b) an intervention based on visualizing best possible selves ("BPS"); and (c) a control condition ("daily events"). In the gratitude condition, students were instructed to write up to five things that they were grateful for in their life. In the "BPS" condition, students were instructed to imagine their ideal life and write how it would look like in future if all their dreams came true. Finally, in the control condition, participants were asked to write about their typical day. Researchers verbally presented the instructions of every exercise to participants. Students were asked to complete their exercise after the instructions were explained by the researcher. Next, participants were encouraged to continue practising their assigned exercise at home and perform it at least twice in the next four weeks. Students in all experimental conditions were informed about the real purpose of the study. The outcome measure of tested interventions was positive and negative affect, assessed by PANAS (Watson et al., 1988). It was hypothesized that practising the gratitude and "BPS" exercises would increase positive affect and decrease negative affect relative to the control condition.

Results indicated that practising all three exercises (including the control exercise) contributed to immediate decrease in negative affect. However, only the "BPS" intervention increased immediate positive affect (the gratitude intervention did not).

These results contradict with previous research that found the gratitude intervention based on counting one's blessings to be one of the most effective PPIs in positive psychology. Nevertheless, the study had some limitations that might mask the real effect of tested interventions. The small number of participants

($N = 67$) who were at their first year of university degree may not be a representative sample, given a possibility of higher stress in this particular population. It is also worth noting that there was only one dependent variable in this experiment (positive and negative affect). Perhaps, the gratitude intervention would have different effects if more SWB variables (e.g. satisfaction with life) were taken into account. Nonetheless, these findings highlight the fact that the effect of gratitude interventions on SWB measures remains open to debate, and further studies are required to ascertain whether or not gratitude interventions represent a useful tool for enhancing SWB.

Evaluating previous research

Previous research suggests that gratitude interventions may offer promising results. The intervention based on listing one's blessings was shown to be among the most effective gratitude interventions in enhancing well-being and decreasing negative affect (or depressive symptoms) in individuals (e.g. Emmons & McCullough, 2003; Lyubomirsky, Tkach, & Sheldon, 2004; Seligman, Steen, Park, & Peterson, 2005; Chan, 2010). However, the effectiveness of this intervention was supported compared to diverse control conditions (e.g. techniques that induce negative feelings, such as listing hassles). Some researchers did not find a gratitude intervention based on count-your-blessings approach to be beneficial in comparison to more neutral control groups (e.g. Emmons & McCullough, 2003; Sheldon & Lyubomirsky, 2006).

It is worth noting that most studies examining the effectiveness of listing blessings were conducted on US participants (e.g. Emmons et al., 2003;

Lyubomirsky et al., 2004; Seligman et al., 2005; Sheldon et al., 2006). It is not known whether these interventions would work when given to different populations. Only one study investigated the benefits of counting blessings in different population of Chinese teachers (Chan, 2010). However, a noticeable limitation of this study was a lack of a control group, and this must be taken into consideration when analysing the results.

Furthermore, the study by Seligman et al. (2005) provided evidence that it is important to investigate long-term benefits of practising PPIs as some positive changes may not be observable at the first post-intervention assessment. However, none of the studies presented above (excluding that of Seligman et al., 2005) examined whether the effectiveness of gratitude interventions persisted over time. This question needs to be addressed in future studies.

Finally, there is still much to be explored to better understand if there are individuals who benefit more from counting their blessings. For instance, Emmons et al. (2003) found that the increases in participants' positive affect following the gratitude intervention were mediated by changes in their gratitude at the state level. Furthermore, Chan (2010) showed that only low dispositionally grateful teachers benefited from the gratitude intervention. It is possible that there are other mediating or moderating variables that may influence the effectiveness of practising gratitude. Further research in this area needs to consider potential moderators and mediators.

In summary, more research is needed to investigate whether gratitude interventions work in other populations and in comparison to control groups. In addition, future research will also need to investigate *how* these interventions work through careful examination of factors that may moderate or mediate the effect of counting blessings on well-being.

Mechanisms Linking Gratitude to Subjective Well-Being

Subjective well being (SWB) is often described in literature as a construct consisting of both cognitive and affective components (Diener, Suh, Lucas, & Smith, 1999). The cognitive component of SWB involves a person's judgements of his or her satisfaction with life. These judgements may be general or may involve specific areas of this person's life (e.g. satisfaction with education, or marital satisfaction). On the other hand, the affective component of SWB consists of a person's positive and negative emotions. Therefore, an individual who consider himself or herself to be satisfied with life, and who experiences pleasant emotions frequently, whilst experiencing unpleasant emotions rarely, may be said to have high SWB. In contrast, an individual who is often dissatisfied with his or her life, and who doesn't experience pleasant emotions very often, while experiencing lots of unpleasant emotional states, can be said to have low SWB (Diener, et al., 1999). According to researchers, SWB is a more formal expression for colloquial term "happiness" (Diener, 1984; Sheldon & Lyubomirsky, 2004). In this thesis SWB and happiness are used interchangeably.

SWB is usually assessed with self-report measures. Happiness is considered to be a subjective experience, and most researchers agree that it should be judged by "whoever lives inside a person's skin" (Myers & Diener, 1995, p. 11). In other words, happiness must be assessed from the perspective of an individual who completes the measures of SWB. There is a general agreement among researchers that self-report measures of SWB are valid (Diener & Lucas, 2000; Sandvik, Diener, & Seidlitz, 1993). For instance, two frequently used self-report scales to assess SWB are the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985), and the Positive Affect and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The SWLS measures the cognitive element of SWB (an individual's overall judgement of satisfaction with life), while PANAS

assesses the emotional component of SWB (positive and negative affect). These two scales are generally used together and are considered to create a reliable picture of one's SWB.

Previous literature suggests that there is a strong relationship between gratitude intervention and SWB. Practising gratitude interventions was found to be beneficial in enhancing life satisfaction and positive affect in individuals (e.g. Emmons et al., 2003; Seligman et al., 2005; Chan, 2010). However, there is little evidence of how gratitude interventions operate and what mechanisms may link these interventions to SWB. This study investigated the influence of one potential moderator – self-esteem on the relationship between gratitude intervention and SWB.

The role of self-esteem

Self-esteem reflects a person's overall feeling of self-worth, self-acceptance, or self-respect, and adequacy as a person (Crocker & Major, 1989). Self-esteem shapes early during our development, and is quite resistant to change (Campbell, 1990). In a number of studies, high self-esteem was found to be one of the most important predictors of satisfaction with life in both adult (e.g. Hong & Giannakopoulos, 1994; Chen, Cheung, Bond, & Leung, 2006) and adolescent samples (e.g. Zhang & Leung, 2002). Indeed, high self-esteem was found to be one of the strongest predictors of happiness (Diener & Diener, 1995). Although SWB and self-esteem are very highly correlated, it is important to note that these two variables have completely different patterns of associations with other predictors (e.g. personality, social relationships, or global life satisfaction) which supports the view that self-esteem and happiness are distinct constructs (Lyubomirsky, Tkach,

& Dimatteo, 2006).

According to the *buffer* hypothesis, high self-esteem functions as a resource that enables people to recover faster from negative events (e.g. Arndt & Goldberg, 2002). Accordingly, the differences between individuals with low and high self-esteem should be most noticeable during stressful life events. In contrast, other researchers such as Whisman and Kwon (1993) suggest that differences between individuals with low and high self-esteem were most noticeable under low life stress. A large study conducted by Ralph and Mineka (1998) found that students with low self-esteem were less prepared to accommodate good news than individuals with high self-esteem. Furthermore, the authors pointed out that low self-esteem has the ability to “poison the good times” (Ralph & Mineka, 1998, p. 211). High self-acceptance is also associated with optimism, more positive expectations, and lack of hopelessness in students (Scheier, Carver, & Bridges, 1994). Individuals with high self-esteem have been found to be more likely to appreciate or savour positive affect (Wood, Heimpel, & Michela, 2003). Self-esteem has also been examined as an intervening variable on certain variables that are closely related to life satisfaction (e.g. perceived happiness, general well-being, or personality) (e.g. Furnham & Cheng, 2000; Yarcheski, Mahon, & Yarcheski, 2001).

Although the relationship between gratitude and self-esteem was not examined in previous research, it is possible that individuals with low self-esteem may be less disposed to appreciate and name their blessings. An important aim of the present research is to investigate whether self-esteem acts as a moderator of the relationship between a gratitude intervention and SWB.

The Present Study

The present study investigated the effectiveness of a 3-day gratitude intervention “three blessings” in a sample of UK participants. The outcome measure was subjective well-being as measured by the SWLS (Diener et al., 1985) and the PANAS (Watson et al., 1988). Gratitude was measured at both state and dispositional levels, as recommended by Chan (2010). The primary aims were:

- To examine whether a gratitude intervention can increase SWB in a UK sample (previous studies have focused on US participants);
- To explore whether the effect of a gratitude intervention on SWB persists over time;
- To investigate whether self-esteem moderates the relationship between a gratitude intervention and SWB;
- To assess gratitude at both trait and state levels.

It was hypothesized that:

1. Participants in the Gratitude Group would experience more state gratitude immediately following the experimental manipulation, relative to participants in the Control Group.
2. The gratitude intervention would lead to enhanced SWB. Participants in the Gratitude Group would show greater positive change in both measures of SWB, and they would also report decreased negative affect, relative to participants in the Control Group.
3. The positive effect of the gratitude intervention on SWB would persist over a period of one week (Day12).

4. Self-esteem would moderate the relationship between the gratitude intervention and SWB. The gratitude intervention would have greater positive impact on individuals with high self-esteem than on individuals with low self-esteem.

Method

Research Design

The present study was longitudinal and used a mixed design. There were two experimental conditions: a Gratitude Group and a Control Group.

Participants were measured at 6 points in time: Day 1, Day 2, Day 3, Day 4, Day 5, and Day 12.

The key independent variables were:

- The experimental condition with two levels: the Gratitude Group, and the Control Group;
- The day of assessment with six levels: Day 1, Day 2, Day 3, Day 4, Day 5, Day 12;
- Self-esteem;
- Trait gratitude.

The dependent variables were:

- Satisfaction with life;
- Positive and negative affect;
- State gratitude.

Participants

Due to time restriction and longitudinal study design, a small number of participants were collected. Only participants who completed the whole study (six days, maximum 10 minutes a day) were included in data analysis. Out of 82 participants who took part in this study, 22 of the individuals were eliminated, because they failed to provide complete data. Therefore, 60 participants remained: 28 male (46.67%) and 32 female (53.33%). There were 34 participants in the Gratitude Group (14 males and 20 females) and 26 participants in the Control Group (12 males and 14 females). Participants were between the ages of 19 and 41 ($M = 26.53$, $SD = 4.91$). The mean age for participants in the Gratitude Group was 26.88 years ($SD = 4.65$) and for participants in the Control Group it was 26.08 years ($SD = 5.29$). The frequencies for all individuals' educational status were as follows: the majority of 34 participants (56.7%) were non-students, 24 participants (40.0%) were postgraduate students, and 2 participants (3.3%) were undergraduate students. All participants reported to be UK citizens.

Materials

All materials used in this study were self-report measures and were administered online. There were five psychometric scales and one demographic questionnaire (see Appendices C, D, E, F, G, and H), prefaced by a "Participant Information Section" on Day 1 (see Appendix A), and followed by "Post-experiment Information Section" on Day 12 (see Appendix B). The "Participant Information Section" outlined the study's design, the participants' right to withdraw, their confidentiality, and the contact details of the experimenter. Moreover, it also involved each participant's consent to taking part in the present

study. The “Post-experiment Information Section” explained the primary aims of this study. It also included the *Gratitude Intervention Instructions* for participants in the Control Group who did not get an opportunity to practise this intervention.

Materials:

1. Subjective well-being measures (SWB):

Satisfaction With Life Scales (SWLS)

Participants’ satisfaction with life was assessed by SWLS (Diener, Emmons, Larsen, & Griffin, 1985). This five-item scale measures general life satisfaction (the cognitive component of SWB). It reveals the person’s own opinion of his/her quality of life (e.g. “In most ways, my life is close to my ideal”, “The conditions of my life are excellent”, “I am completely satisfied with my life”) (see Appendix C). The SWLS has been reported to have high internal consistency (Cronbach’s $\alpha = .87$) and good test-retest reliability ($r = .82$). In completing the scale, individuals were asked to indicate their agreement with each of the five statements using a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Participants were asked to consider their life satisfaction ‘in general’. A total score was obtained by adding up participants’ responses. Scores can range from 5-35, with higher scores indicating more satisfaction with life.

Positive and Negative Affect Schedule (PANAS)

The PANAS (Watson, Clark, & Tellegen, 1988) was used to measure participants’ level of positive and negative emotions. It consists of two scales: positive affect scale (PA), and negative affect scale (NA). Each of these scales contains ten emotion adjectives (e.g., *interested, distressed, excited, upset, strong, irritable, alert, ashamed, inspired*) and measures the amount of time participants spent experiencing each emotion (see Appendix D). In completing the PANAS, participants were asked to indicate how intensively they were experiencing each

emotion at the present moment in time using the five-point Likert scale ranging from 1 (*not at all*) to 5 (*extremely*). A total score was obtained separately for positive affect and negative affect by adding up the ratings on all items. The two scales have been reported to have high internal consistency (Cronbach's above .85). Scores on both scales can range from 10 to 50. Higher scores on the positive affect scale indicate higher levels of positive emotions. Similarly, higher scores on the negative affect scale represent lower levels of negative emotions.

2. Gratitude at the state and dispositional levels:

Gratitude Adjectives Checklist (GAC)

The GAC (McCullough et al., 2002) was used as a measure of state gratitude (see Appendix E). This scale was used to assess participants' experience of the feeling of gratefulness before the gratitude intervention, immediately after the gratitude intervention, one day after the gratitude intervention, and one week after the gratitude intervention. The GAC consists of three adjectives (*appreciative, grateful, and thankful*). Participants were asked to rate the intensity of experiencing each of these emotions at the present moment on a five-point Likert scale: 1 (*not at all*), 2 (*a little*), 3 (*moderately*), 4 (*quite a bit*), and 5 (*extremely*). A total score was obtained by adding up the ratings on these three adjectives. Scores can range from 3-15, with higher scores indicating higher levels of state gratitude. The GAC has demonstrated to have good psychometric properties, including strong internal consistency (Cronbach's $\alpha = 0.87$) (McCullough et al., 2002).

Gratitude Questionnaire (GQ-6)

Participants' grateful disposition was measured by the GQ-6 (McCullough et al., 2002). This scale consists of six items and assesses four different facets of dispositional gratitude that include: (1) intensity (e.g. "I have so much in life to be thankful for"); (2) frequency (e.g. "Long amounts of time can go by before I feel grateful to something or someone"); (3) life span (e.g. "As I get older, I find myself

more able to appreciate the people, events and situations that have been part of my life history"); and (4) density or the number of people who can elicit the feeling of gratefulness (e.g. "I am grateful to a wide variety of people") (see Appendix F). The GQ-6 has been reported to have excellent psychometric properties, including concordant validity peer reports (McCullough et al., 2002). Moreover, it has been recognised as the most commonly used scale for measuring dispositional gratitude (Emmons et al., 2003). When completing the GQ-6, participants were asked to indicate whether each presented statement was descriptive of him/her on a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A total score was obtained by adding up participants' responses on six items (two items were reverse scored). Scores can range from 6 to 42. Median split has been used to differentiate between individuals high and low in dispositional gratitude (McCullough et al. 2002).

3. Self esteem:

Rosenberg Self-esteem Scale (RSES)

The RSES (Rosenberg, 1965) was used to assess participants' global self-esteem. The scale consists of 10 items that are rated from 0 (*strongly disagree*) to 3 (*strongly agree*). Examples of items include: "On the whole, I am satisfied with myself", "I feel I do not have much to be proud of", and "I take a positive attitude toward myself" (see Appendix G). The score can range from 0 to 30. Scores below 15 suggest low self-esteem. The RSES is one of the most frequently used scales to measure self-esteem because of its excellent psychometric properties, including reproducibility index of 0.93, test-retest reliability of 0.85, and proven validity (Blascovich & Tomaka, 1991).

4. Demographic information:

Demographic Questionnaire (DQ)

The Demographic Questionnaire included the following information about

each participant: name, surname, email address, sex, age, nationality, and educational status (see Appendix H).

Procedure

The study was advertised on a social network website (Facebook). The experimenter also sent an email to all undergraduate and postgraduate students at the University of Edinburgh enrolled on the following programmes: Philosophy, Language Sciences, Informatics, and Mathematics. The study was promoted as an *Emotion Study* to be conducted online. Individuals could take part in this research by clicking on link provided in email/on Facebook website.

Participants were not fully informed about the real intentions of the study (see Appendix A). Instead, participants were informed that this research was intended to test how their emotions fluctuate in day-to-day life. In order to take part in this research all individuals had to be UK citizens. The participation in this study was voluntary and prior to completing the questionnaires, all participants had to consent to taking part in this study by selecting an online button: "I consent" (see Appendix A). Individuals who completed the whole study were entered in a prize draw (£150 cash).

An Internet study was designed using the following website: www.survey.ed.ac.uk. The researcher received permission from the University of Edinburgh to use the above website for the time period of this study.

This study took typically 10 minutes (per day) across 6 days: Day 1, Day 2, Day 3, Day 4, Day 5, and Day 12. Table 1 contains information about procedure at each Day of assessment.

Table 1: Study Procedure at each Day of Assessment

Day	Description	Scales Used
Day 1	<u>Pre-intervention Baseline Assessment</u> Prior to the 3-day intervention, participants in both experimental conditions were asked to complete six short questionnaires online.	SWLS PANAS GQ-6 GAC RSES DQ
Day 2 Day 3 Day 4	<u>3-Day Intervention and Assessment</u> Participants were randomly allocated to one of two study conditions: the Gratitude Group or the Control Group. Gratitude Group ($n=34$). Participants received the “gratitude exercise”. Specifically, individuals were given the following instructions (adopted from the study of Emmons & McCullough, 2003): <i>“There are many things in our lives, both large and small, that we might be grateful about. Think back over the past day, and write down three things in your life that you are grateful or thankful for. Please use the space provided below to perform your task”.</i> Control Group ($n=26$). Participants received the placebo control exercise. Specifically, the following instructions were given to participants: <i>“There are many things or activities that we do every day. What are some of the activities that you completed today? Please use the space provided below and write down three things that you did today”.</i> Participants were requested to perform their assigned exercise online every day for three consecutive days.	SWLS PANAS GAC (used immediately after the intervention on each day)
Day 5	<u>Post-intervention Outcome Assessment</u> One day after the 3-day intervention, participants in both experimental conditions were asked to complete five short questionnaires online in order to measure any changes.	SWLS PANAS GQ-6 GAC RSES
Day 12	<u>Follow-up Assessment</u> One week after the 3-day intervention, participants were asked to complete the same questionnaires as at the ‘Post-intervention outcome assessment’ in order to measure if there were any lasting changes.	SWLS PANAS GQ-6 GAC RSES

*SWLS-Satisfaction With Life Scales, *PANAS-Positive and Negative Affect Schedules, *GQ-6-Gratitude Questionnaire, *GAC-Gratitude Adjectives Checklist, *RSES-Rosenberg Self-esteem Scale.

Note. Following the baseline assessment on Day 1, each morning (Day 2 – Day 12), an email reminder was sent to all participants with a link to follow to complete their daily exercise and/or measures online.

Results

Preliminary Analyses

Given the small number of participants, the researcher first tested for differences in sex and educational status (demographic variables) between the two experimental conditions. A phi correlation between experimental condition and sex revealed that there were similar numbers of males and females in both Groups, $r_{\phi}(60) = -0.12, p = 0.33$. Moreover, a phi correlation between experimental condition and educational status suggested that there were equal numbers of students and non-students in both conditions, $r_{\phi}(60) = 0.10, p = 0.41$.

Furthermore, differences in pre-intervention (baseline) scores between the Gratitude Group and the Control Group on state gratitude, satisfaction with life, positive affect, negative affect, self-esteem, and trait gratitude were examined using independent samples t-tests. Significant differences between the two experimental conditions were found for baseline negative affect, $t(58) = 2.29, p < 0.05$, and baseline trait gratitude, $t(58) = 2.90, p < 0.01$. Specifically, participants in the Gratitude Group had a higher baseline negative affect ($M = 16.59, SD = 5.54$) than participants in the Control Group ($M = 14.08, SD = 2.77$). Additionally, individuals in the Gratitude Group began with a higher trait gratitude ($M = 34.50, SD = 3.39$) than those in the Control Group ($M = 30.50, SD = 6.35$). Finally, no differences emerged between the two conditions in initial state gratitude: $t(58) = 1.53, p = 0.13$; $t(58) = -0.81$, satisfaction with life: $p = 0.42$; $t(58) = 0.89$, positive affect: $p = 0.37$; $t(58) = -0.08$, and self-esteem: $p = 0.93, t(58) = -0.08$ (see

Appendixes I and J for means and standard deviations on all variables at each time point assessed).

Hypothesis Tests

Hypothesis 1: The effect of the gratitude intervention on state gratitude.

“Participants in the Gratitude Group would experience more state gratitude immediately following the experimental manipulation, relative to participants in the Control Group”.

First, it was investigated whether the gratitude intervention increased the level of state gratitude in participants in the Gratitude Group relative to participants in the Control Group. To examine this hypothesis, a mixed-design Analysis of Variance (ANOVA) was conducted. State gratitude was entered as the dependent variable. The independent variables were the experimental condition to which each participant was assigned (Condition), and the day of measurement on state gratitude (Day). The experimental condition was entered as a between-subjects factor with two levels: the Gratitude Group (1), and the Control Group (2). The day of measurement was entered as a within-subjects factor with six levels: Day 1, Day 2, Day 3, Day 4, Day 5, and Day 12. The results of the mixed ANOVA for state gratitude are summarised in Table 2.

Table 2: Mixed ANOVA Summary Table

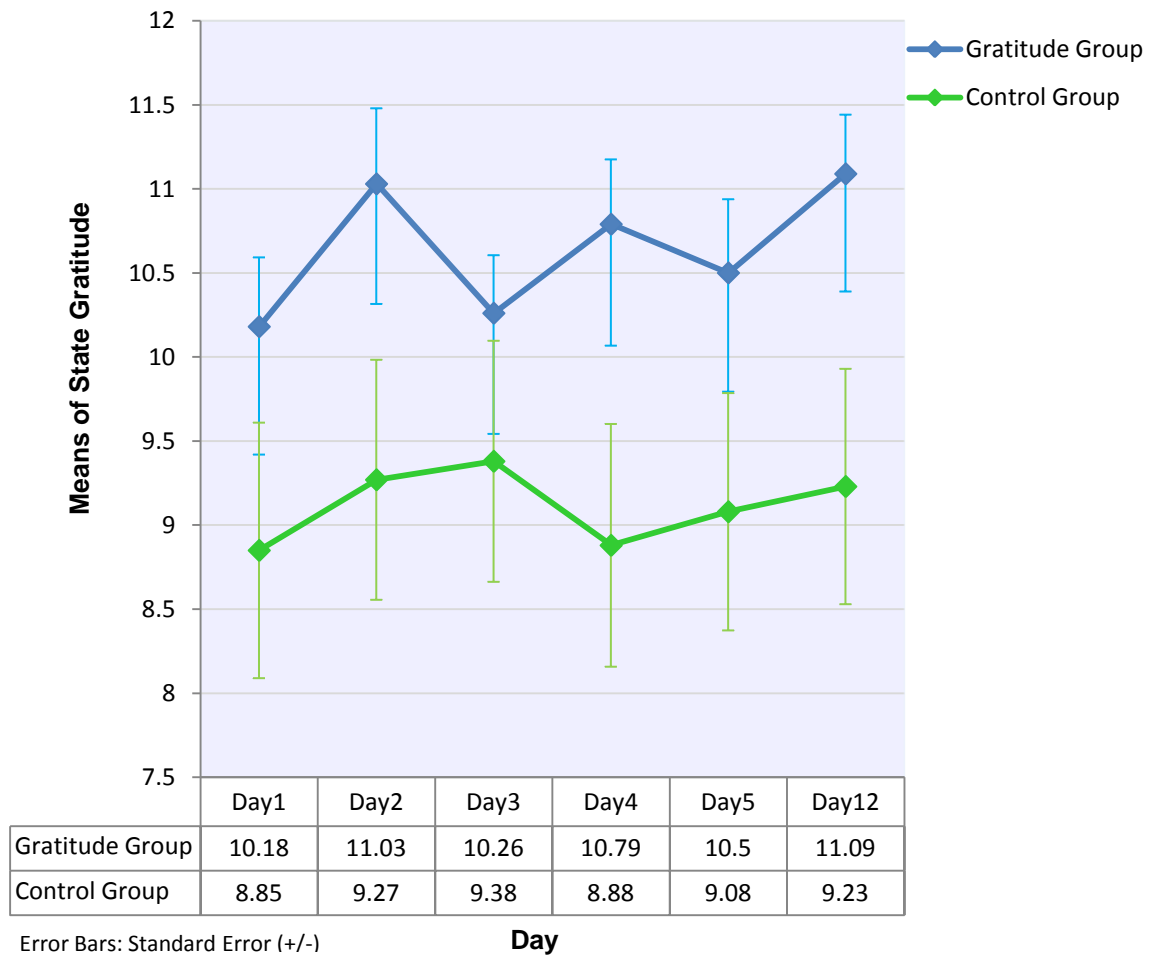
Measure: State Gratitude						
Source	Type III Sum of Squares	df	Mean Square	<i>F</i>	Sig.	Partial Eta Squared
Within Subjects						
Day	17.66	5	3.53	1.91	.091	.032
Day*Condition	11.46	5	2.29	1.24	.288	.021
Error (Day)	533.79	290	1.84			
Between Subjects						
Condition	206.06	1	206.06	4.66	.035*	.074
Error	2563.30	58	44.19			

* $p < 0.05$.

From Table 2, we observe that the mean scores on state gratitude did not differ within-subjects across six different days of assessment. The Day \times Condition interaction was also non-significant. However, the test for the between-subjects effects showed that there was a significant difference in performance between participants in both Groups. Individuals in the Gratitude Group had significantly higher scores on state gratitude than participants in the Control Group (see Table 2).

Graph 1 shows the means of state gratitude, separately for both Groups on every Day of assessment.

Graph 1: Estimated Marginal Means of State Gratitude



From Graph 1, we observe that the effect of Condition emerged because the Gratitude Group began with higher state gratitude at the baseline (Day 1). Since the effect of Day was non-significant for neither of the two groups, it means that the gratitude intervention did not have an actual effect on state gratitude, and the Hypothesis 1 is not confirmed.

Hypothesis 2: The effect of the gratitude intervention on SWB.

“The gratitude intervention would lead to enhanced SWB. Participants in the Gratitude Group would show greater positive change in both measures of SWB, and they would also report decreased negative affect relative to participants in the Control Group”.

To evaluate the effect of the 3-day gratitude intervention on SWB, three separate mixed-design Analyses of Variance (ANOVA) were conducted. The experimental condition was entered as the unrelated (between-subjects) independent variable and the day of measurement as the related (within-subjects) independent variable. The SWB variables (satisfaction with life, positive affect, and negative affect) were entered as dependent variables. Table 3 shows the mixed ANOVA summary table for satisfaction with life.

Table 3: Mixed ANOVA Summary Table

Measure: Satisfaction With Life						
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Within Subjects						
Day	135.53	3.95	34.26	6.73	.000***	.10
Day*Condition	158.36	3.95	40.03	7.87	.000***	.12
Error (Day)	1166.78	229.42	5.08			
Between Subjects						
Intercept	30202.62	1	30202.62	1032.83	.000	.947
Condition	24.97	1	24.97	.854	.359	.01
Error	1696.06	58	29.24			

*** $p < 0.01$.

First, the researcher evaluated the effect of the gratitude intervention on participants' satisfaction with life. Mauchly's Test of Sphericity was significant for satisfaction with life ($p = .002$) and signified heterogeneity of covariance. Therefore, the Greenhouse-Geisser statistic was used. From Table 3, it can be observed that there was a significant main effect for Day for satisfaction with life. The Condition \times Day interaction was also significant. These results indicate that participants in both experimental conditions reported significantly different levels of satisfaction with life on Day 1, Day 2, Day 3, Day 4, Day 5, and Day 12. However, no significant main effect existed for Condition for satisfaction with life.

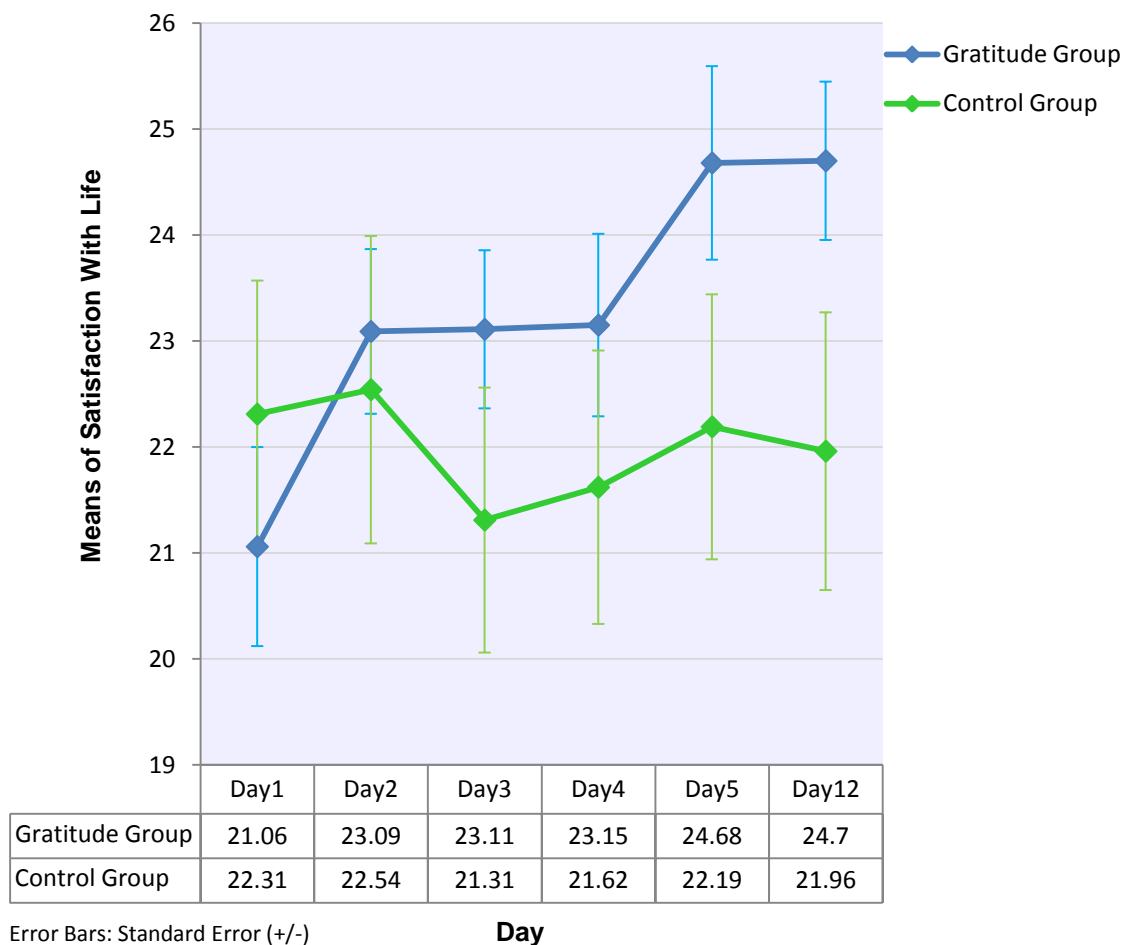
Since there was a significant interaction effect between Condition and Day of assessment on satisfaction with life, paired samples t-tests were conducted to explore further the differences within each group. The results revealed that there were significant differences within the Gratitude Group between the following days of assessment (see Appendix K):

- Day 1 and Day 2: $t(33) = -3.25, p < 0.01$;
- Day 1 and Day 3: $t(33) = -3.52, p < 0.001$;
- Day 1 and Day 4: $t(33) = -4.22, p < 0.001$;
- Day 1 and Day 5: $t(33) = -6.97, p < 0.001$;
- Day 1 and Day 12: $t(33) = -7.19, p < 0.001$.

From Graph 2 (below) we can observe that participants within the Gratitude Group experienced significantly higher satisfaction with life on every Day of measurement in comparison to their baseline assessment on Day 1. In contrast, participants within the Control Group had a tendency to experience lower satisfaction with life. This decrement was significant between Day 2 and Day 3: $t(25) = 2.74, p < 0.05$ (see Graph 2).

The above results suggest that participants in the Gratitude Group has benefited from the gratitude intervention whereas the Control Group has slightly decreased on satisfaction with life.

Graph 2: Estimated Marginal Means for Satisfaction With Life



Regarding the effect of the gratitude intervention on participants' positive affect, the results of the mixed ANOVA are summarised in Table 4.

Table 4: Mixed ANOVA Summary Table

Measure: Positive Affect						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Within Subjects						
Day	70.88	3.48	20.33	1.09	.366	.01
Day*Condition	37.59	3.48	10.78	.57	.656	.01
Error (Day)	3771.94	202.22	18.65			
Between Subjects						
Intercept	290962.97	1	290962.97	961.41	.000	.94
Condition	735.19	1	735.19	2.42	.125	.04
Error	17553.09	58	302.64			

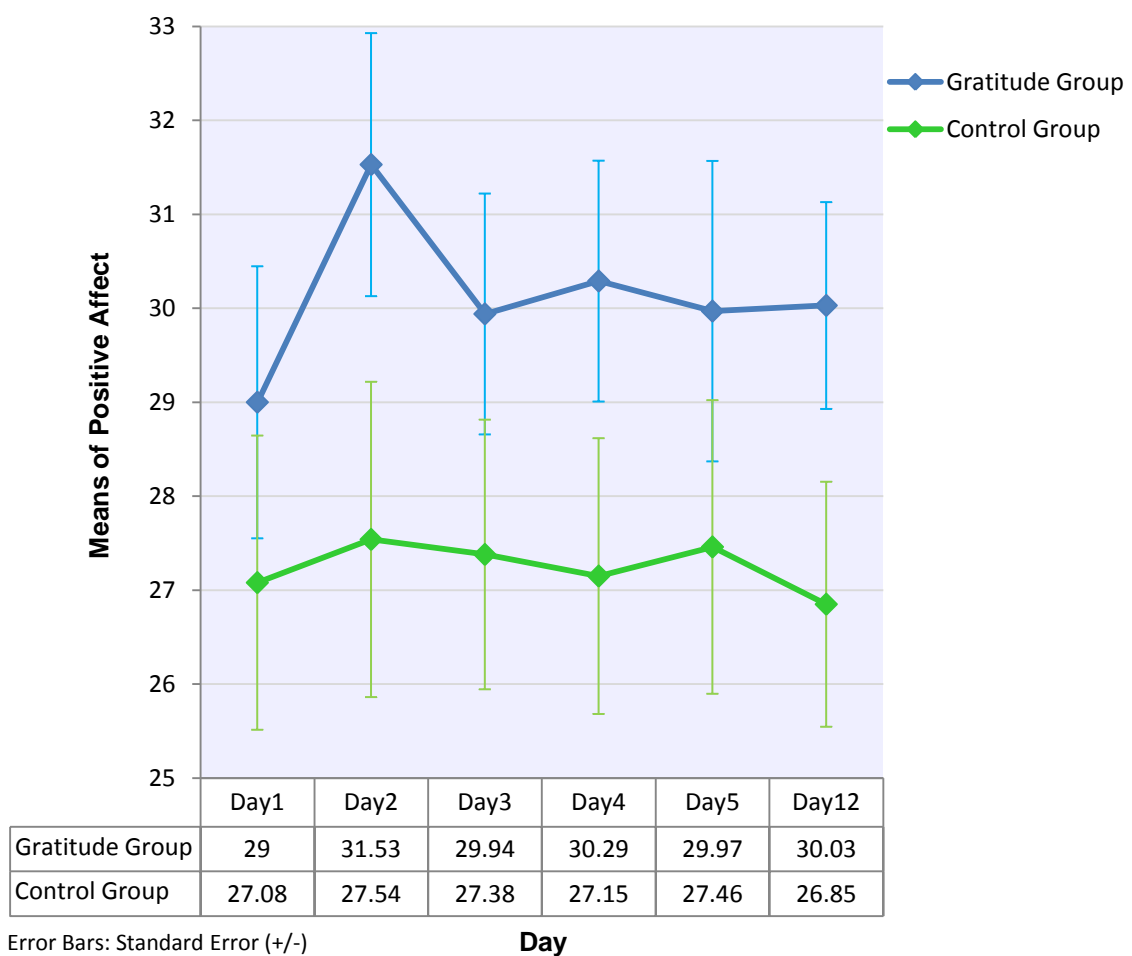
Mauchly's Test of Sphericity was also significant for positive affect ($p < 0.001$) and therefore the Greenhouse-Geisser statistic was used. The results in Table 4 indicate that the Day main effect, the Day \times Condition interaction, and the Condition main effect were all non-significant. These results suggest that participants in both Groups did not report any significant changes in positive affect following the experimental manipulation.

Although no follow-up tests needed to be conducted for positive affect, the same procedure as for satisfaction with life was followed. Paired samples t-tests within the Gratitude Group revealed that there were significant within-subjects differences between Day 1 and Day 2: $t(33) = -4.19$, $p < 0.001$. From Graph 3 below, we observe that participants within the Gratitude Group experienced significantly higher level of positive affect on Day2 in comparison to their baseline assessment on Day 1. In contrast, individuals within the Control Group experienced similar

levels of positive affect across all days of measurement (see Graph 3).

These results suggest that, regarding the measure of positive affect, participants in the Gratitude Group benefited from the Gratitude intervention but only on Day 2, relative to individuals in the Control Group who remained stable over time.

Graph 3: Estimated Marginal Means of Positive Affect



Finally, the effect of the gratitude intervention on participants' negative affect is summarised in Table 5.

Table 5: Mixed ANOVA Summary Table

Measure: Negative Affect						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Within Subjects						
Day	42.34	3.16	13.39	1.35	.257	.02
Day*Condition	155.52	3.16	49.18	4.97	.002***	.079
Error (Day)	1811.92	183.38	9.88			
Between Subjects						
Intercept	12920.20	1	12920.20	736.37	.000	.927
Condition	.487	1	.487	.028	.868	.000
Error	1017.64	58	17.54			

*** $p < 0.01$.

Mauchly's Test of Sphericity was also significant for negative affect ($p < 0.001$) and the Greenhouse-Geisser statistic was used. The results indicate that there was a significant interaction between Day and Condition. Therefore, participants in both Conditions reported significantly different levels of negative affect on Day 1, Day 2, Day 3, Day 4, Day 5, and Day 12. In contrast, the main effect of Day and the main effect of Condition were all non-significant.

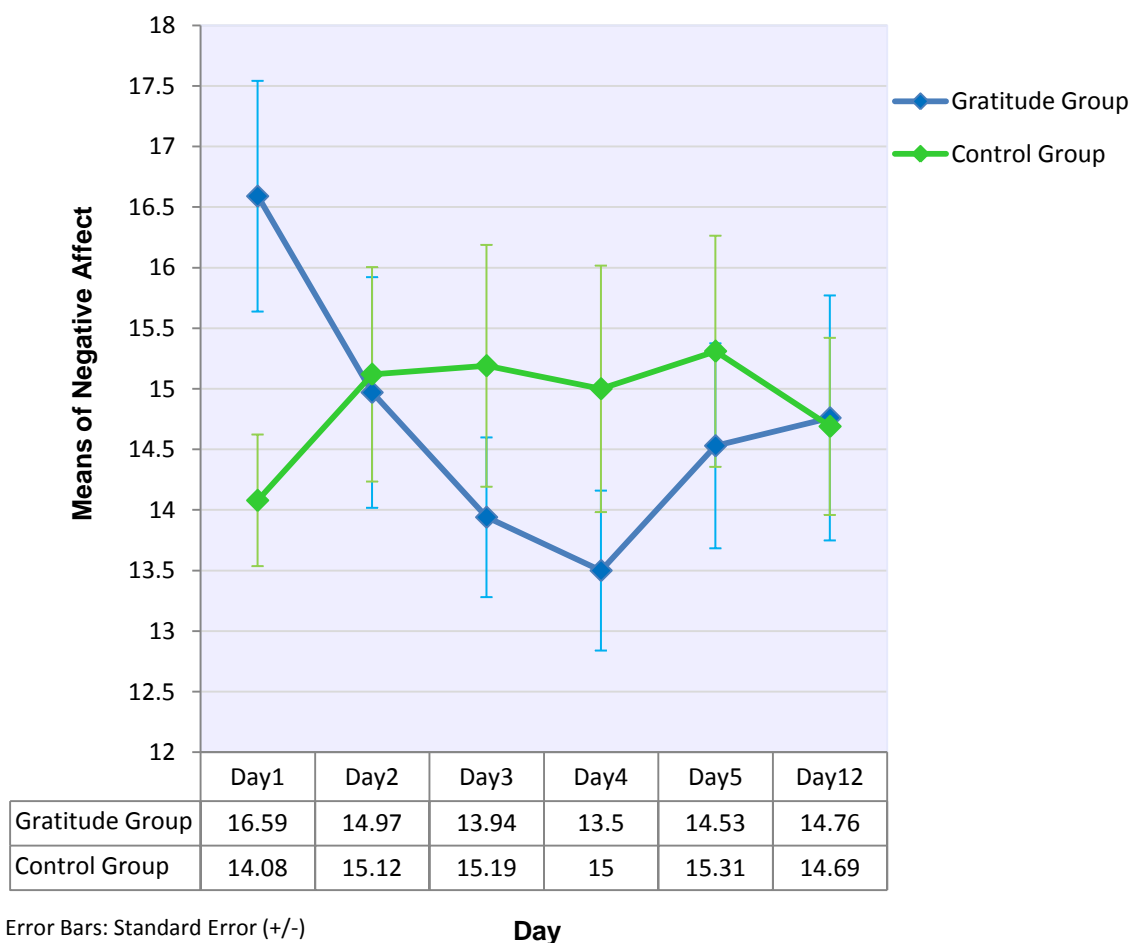
Paired samples t-tests within the Gratitude Group revealed that there were significant within-subjects differences between the following Days of assessment on negative affect (see Appendix L):

- Day 1 and Day 3, $t(33) = 4.30, p < 0.001$;
- Day 1 and Day 4, $t(33) = 3.87, p < 0.001$;

- Day 1 and Day 5, $t(33) = 3.19, p < 0.01$;

From Graph 4, we observe that the Gratitude Group had a tendency to experience reduced levels of negative affect and this decrement was significant on Day 3, Day 4, and Day 5 in comparison to their baseline assessment on Day 1. In contrast, paired samples t-tests within the Control Group did not reveal any differences in negative affect (see Graph 4).

Graph 4: Estimated Marginal Means of Negative Affect



Overall, these results suggest that participants in the Gratitude Group benefited from the gratitude intervention regarding their satisfaction with life, and positive and negative affect, relative to individuals in the Control Group. The Hypothesis 2 is confirmed.

Hypothesis 3: Examining the effect of the gratitude intervention on SWB at 1-week follow-up period.

“The positive effect of the gratitude intervention on SWB on Day 5 will persist over a period of one week (Day12)”.

A positive effect of the gratitude intervention was found on Day 5 for satisfaction with life and negative affect. Therefore, only these two dependent variables were examined. Paired samples t-test was used to investigate whether the effect of the gratitude intervention on satisfaction with life (Day 5) and negative affect (Day 5) persisted over one week time (Day 12). Non-significant differences between the mean scores on satisfaction with life and positive affect on Day 5 and Day 12 would indicate that the positive effect of the gratitude intervention persisted over a period of one week.

The results revealed that the differences between Day 5 and Day 12 for life satisfaction and negative affect were all non-significant (see Table 5), suggesting that the positive effect of the gratitude intervention persisted over one week time, and the Hypothesis 3 was supported.

Table 6: Comparison between Post-intervention Assessment (Day 5) and Follow-up Assessment (Day 12) on Measures of Satisfaction With Life and Negative Affect.

	Post-intervention assessment (Day5)		Follow-up assessment (Day12)		<i>t</i>	df	Sig. (2- tailed)
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Satisfaction With Life Gratitude Group (n=34)	24.68	5.32	24.7	4.35	.00	33	1.00
Negative Affect Gratitude Group (n=34)	14.53	4.93	14.76	5.89	-.41	33	.68

**Hypothesis 4: Evaluating the moderating effect of self-esteem
on the relationship between the gratitude intervention
and SWB.**

“Self-esteem would moderate the relationship between the gratitude intervention and SWB. The gratitude intervention would have greater positive impact on individuals with high self-esteem than on individuals with low self-esteem”.

Certain people might benefit more from the gratitude intervention than other individuals. To determine whether self-esteem augments the effect of the

gratitude intervention on SWB, baseline self-esteem (Day 1) was tested as a moderator at three points in time: (1) Day 234 (the average score for Day 2, Day 3, and Day 4 created by summing up the scores from each day and dividing them by 3); (2) Day 5; (3) Day 12.

Nine separate hierarchical regression models were constructed as recommended by Baron and Kenny (1986) to investigate whether self-esteem (Day 1) moderated the effects of experimental condition on satisfaction with life, positive affect, and negative affect on Day 234, Day 5, and Day 12. In addition, baseline scores on dependent variables on Day 1 were tested as covariates and included in regression equations. Before testing for moderating effects, predictor variables, moderator, and covariates were transformed following the recommendations by Frazier, Tix, and Barron (2004). Experimental condition was dummy coded (Gratitude Group=0, Control Group=1). Self-esteem (Day 1), satisfaction with life (Day 1), positive affect (Day 1), and negative affect (Day 1) were all standardized and replaced with z-scores. These techniques were performed to reduce multicollinearity (Frazier et al., 2004).

When either satisfaction with life, positive affect or negative affect were the dependent variables, at Step 1 the criterion variable at the baseline (Day 1) was entered as a covariate. At Step 2, the experimental condition was entered. At Step 3, the moderator (baseline self-esteem on Day1) was entered. At Step 4, the Condition \times Moderator interaction was entered. According to Baron and Kenny (1986), significant interaction term indicates significant moderator effects. Statistically significant results of regression analyses are summarised in Table 7.

Table 7: Hierarchical Multiple Regression to Test Moderator Effects

Variables	B	SEB	β	R^2	R^2 change	F change
Dependent variable: Life satisfaction (D12)						
Step 1						
Life satisfaction (D1)	4.60	.42	.81	.67	.67***	118.16***
Step 2						
Condition	-3.73	.70	-.33	.78	.10***	28.16***
Step 3						
Self-esteem (D1)	.26	.49	.04	.78	.00	.29
Step 4						
Self-esteem(D1) \times Condition	1.50	.72	.16	.79	.01*	4.32*
Dependent variable: Negative affect (D5)						
Step 1						
Negative affect (D1)	3.29	.47	.67	.45	.45***	48.75***
Step 2						
Condition	2.73	.92	.28	.53	.07**	8.84**
Step 3						
Self-esteem (D1)	-.11	.45	-.02	.53	.00	.06
Step4						
Self-esteem(D1) \times Condition	-1.97	.91	-.24	.56	.03*	4.65*

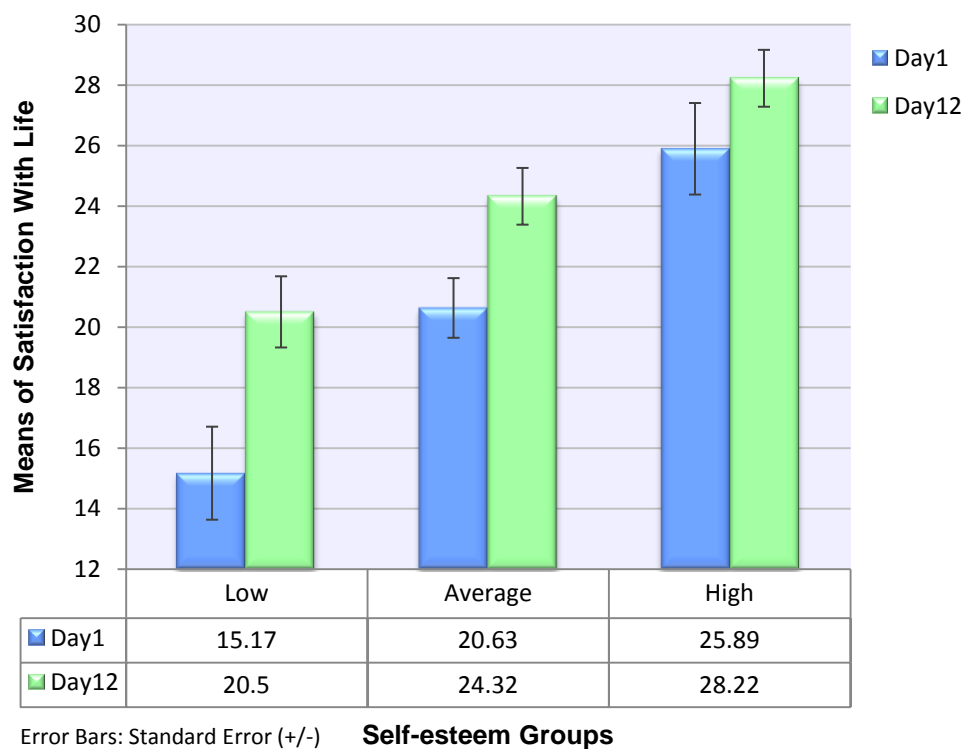
*** $p < .001$, ** $p < .01$, * $p < .05$.

Significant interactions between experimental condition and self-esteem were found for life satisfaction (Day 12) and negative affect (Day 5) (see Table 7). No interaction effects were found for: life satisfaction (Day 234), $p = 0.13$; life satisfaction (Day 5), $p = 0.89$; positive affect (Day 234), $p = 0.34$; positive affect (Day 5), $p = 0.84$; positive affect (Day 12), $p = 0.89$, negative affect (Day 234), $p = 0.15$; and negative affect (Day 12), $p = 0.64$.

To identify the form of these interactions, column charts of significant Condition \times Self-esteem interactions were created for representative self-esteem groups (as recommended by Cohen, Cohen, West, and Aiken, 2003). The self-esteem groups were chosen at low (-1 SD from the mean), average (mean), and high (1 SD from the mean) values of the self-esteem variable. Figure 1 shows

column chart of significant Condition \times Self-esteem interaction with life satisfaction (Day 12) as the outcome variable.

Figure 1: Column Chart of Significant Condition \times Self-esteem Interaction for the Gratitude Group



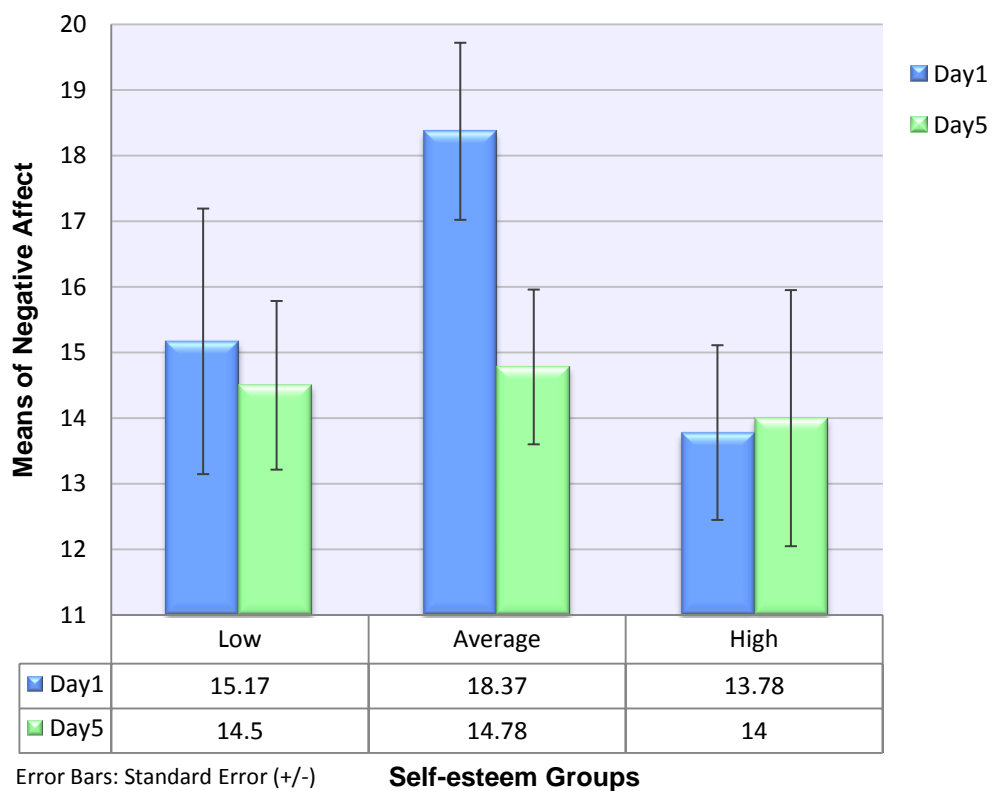
Note. Day 1: Pre-intervention baseline assessment; Day 12: Post-intervention follow-up assessment.

From Figure 1, we can observe that the group with a low level of self-esteem experienced the highest increase in life satisfaction (Day 12) ($M = 15.17$ on Day 1, $M = 20.5$ on Day 12). The high self-esteem group also experienced an increase in life satisfaction (Day12), however this increase was much lower ($M = 25.89$ on Day 1, $M = 28.22$ on Day 12). These results suggest that participants with low self-esteem benefited the most from the gratitude intervention regarding

their life satisfaction on Day 12.

Figure 2 shows column chart of significant Condition \times Self-esteem interaction with negative affect (Day 5) as the outcome variable.

Figure 2: Column Chart of Significant Condition \times Self-esteem Interaction for the Gratitude Group



Note. Day 1: Pre-intervention baseline assessment; Day 12: Post-intervention follow-up assessment.

From Figure 2, we can observe that participants with average level of self-esteem experienced the highest decrease in negative affect (Day 5) ($M = 18.37$ on baseline Day 1, $M = 14.78$ on Day 5). In contrast, participants with a high level of self-esteem experienced a slight increase in negative affect (Day 5) following the

experimental manipulation ($M = 13.78$ on baseline Day 1, $M = 14$ on Day 5). These results suggest that individuals with average self-esteem benefited the most from the gratitude intervention regarding their negative affect on Day 5.

Overall, self-esteem moderated the effect of the gratitude intervention on satisfaction with life (Day 12) and negative affect (Day 5). However, in contrast to the predictions, the high self-esteem group benefited less from the gratitude intervention than the low self-esteem group. The Hypothesis 4 is partially supported.

Discussion

The overall aim of the present study was to investigate the effectiveness of the 3-day gratitude intervention programme on a sample of UK individuals. The specific research objectives were:

1. To examine whether the gratitude intervention is effective in enhancing SWB in UK individuals.
2. To explore whether the positive effects of the gratitude intervention on SWB persist over one week time.
3. To investigate the influence of self-esteem on the relationship between the gratitude intervention and SWB.
4. To assess gratitude at both trait and state levels.

This section will first summarize the findings of the current study and present conclusions derived from the findings and previous literature. Next, strengths and limitations of this study will be considered. Finally, future directions will be discussed. The section will finish with the overall conclusion.

Summary of Findings

Four hypotheses were investigated in this study. The majority of hypotheses were confirmed.

Hypothesis 1: The effect of the gratitude intervention on state gratitude

The first hypothesis stated that participants in the Gratitude Group would experience more state gratitude following the experimental manipulation, relative to individuals in the Control Group. The results revealed that the gratitude intervention did not have a significant effect on both groups' state gratitude, and therefore the first hypothesis was rejected.

In contrast, Emmons and McCullough (2003) found that listing blessings on a daily basis for two weeks increased the level of state gratitude in participants in the gratitude condition, relative to individuals in the hassles condition. This finding was replicated in the same study but with the use of adults with neuromuscular disease. In addition, the authors found that the observed boost in participants' positive emotions resulted from the gratitude induction. No such changes in state gratitude were found in the present study. One of the factors that might have contributed to non-significant effects of the gratitude intervention on state gratitude in this research may be the use of a different comparison condition. Emmons et al. (2003) contrasted the gratitude condition with the condition inducing negative feelings in participants (listing hassles), whereas this study used a more neutral comparison group (listing daily activities).

Furthermore, Chan (2010) also found that the 8-week gratitude intervention programme contributed to increased feeling of gratefulness in Chinese teachers. However, in the author's study only the individuals with low levels of dispositional gratitude benefited from counting their blessings. Since in the present study all participants reported to be high in trait gratitude, it is possible that it was harder to increase the feeling of thankfulness in people who were

already very grateful (Chan, 2010). Hence, no significant changes in state gratitude emerged in this study.

Hypothesis 2: The effect of the gratitude intervention on subjective well-being

The second hypothesis proposed that the gratitude intervention would lead to increased SWB in participants in the Gratitude Group, relative to individuals in the Control Group. The results from the current study revealed that the gratitude intervention was effective in enhancing satisfaction with life and decreasing negative affect in participants in the Gratitude Group. Moreover, this intervention also momentarily increased individuals' positive affect. Therefore, the second hypothesis was confirmed.

Specifically, regarding the measure of satisfaction with life, further analyses revealed that over time individuals practising the gratitude intervention had a tendency to score higher on satisfaction with life, relative to participants in the Control Group, who tended to experience reduced levels of satisfaction with life. In addition, this boost in satisfaction with life for individuals in the Gratitude Group was evident from Day 2 (immediately after participants performed the gratitude intervention only once), and was still significant on Day 5 (one day after the 3-day gratitude intervention programme). This finding is consistent with previous research by Chan (2010) who found that Chinese teachers experienced increased levels of satisfaction with life following the 8-week gratitude intervention programme. However, the author also found that only teachers with low levels of dispositional gratitude benefited from the gratitude intervention, regarding their satisfaction with life. As mentioned before, all participants in the present study reported to be high in trait gratitude. Therefore, these two findings are conflicting. The present study provides evidence that adults with high levels of grateful disposition can boost their life satisfaction through engagement in counting their blessings every day for a period of three days.

Furthermore, this study has found the gratitude intervention to be effective in enhancing positive affect in participants in the Gratitude Group. However, this improvement in positive affect was only evident on Day 2 and did not remain significant for the rest of the days that the intervention took place.

Most previous studies (McCullough et al., 2003; Lyubomirsky et al., 2004; Chan, 2010) have found that practising gratitude enhanced positive affect in participants. However, it should be noted that this research has used a neutral comparison condition. Only one previous study (by Lyubomirsky et al., 2004) found that listing blessings once a week for a period of six weeks was effective in increasing positive affect in comparison to the no-treatment control condition. Nevertheless, it is interesting to consider why individuals in this study experienced enhanced positive affect on Day 2 only. One possible explanation might be that positive affect is something very temporary and it changes quickly throughout the course of a day (Russell & Carroll, 1999). Perhaps, it was difficult to increase the level of positive emotions for longer, despite the presence of the intervention on Day 3, and Day 4.

Finally, regarding the effect of the gratitude intervention on participants' negative affect, further analyses revealed that there was a gradual decrement of negative emotions until Day 4 in individuals in the Gratitude Group. On Day 5 the levels of negative emotions in the Gratitude Group went up slightly. In contrast, participants in the Control Condition remained stable over time. This pattern of findings may suggest that negative emotions (likewise positive emotions) are momentary feelings and it is hard to influence these feeling for longer periods of time. Nevertheless, it is very impressive that the level of negative emotions on Day 5 in the Gratitude Group was still significantly lower in comparison to their baseline assessment on Day 1. This finding may suggest that the gratitude intervention strongly influenced the level of negative affect in participants practising this intervention.

Most of the previous research has not found any significant changes in

participants' negative affect following the gratitude intervention. Only one study (by Lyubomirsky, Tkach & Sheldon, 2004) provided evidence that this intervention contributed to lower levels of negative affect, relative to the no-treatment control condition. However, it is worth mentioning that the study by Lyubomirsky et al. (2004) also found that only participants who counted their blessings once a week benefited from the gratitude intervention. Therefore, the results of the present study suggest that counting blessings on a daily basis can also substantially decrease the level of negative emotions in UK adults.

In summary, the present study provided evidence that the gratitude intervention based on the count-your-blessings approach is effective in increasing satisfaction with life and decreasing negative affect in UK adults. In addition, this intervention can also temporarily increase the level of positive emotions.

Hypothesis 3: The long-term benefits of the gratitude intervention on SWB

The third hypothesis stated that the effectiveness of the gratitude intervention on SWB (satisfaction with life, positive and negative affect) would persist over one week time. The results of the present study revealed that the benefits of practising gratitude intervention persisted over the period of one week, regarding participants' satisfaction with life and negative affect. Therefore, the third hypothesis was partially confirmed.

Most previous research had been of a pre-test/post-test design. It was not examined whether this particular gratitude intervention based on counting blessings could contribute to longer lasting benefits. However, practising another gratitude intervention (the "gratitude visit") was found to be effective in increasing happiness and decreasing depressive symptoms in participants for a period of one month (Seligman et al., 2005). Therefore, the findings provided by

this research indicate that the positive effects of counting blessings can be sustained over one week time.

Hypothesis 4: The influence of self-esteem on the relationship between gratitude intervention and SWB

The fourth hypothesis proposed that self-esteem would moderate the effectiveness of the gratitude intervention on SWB. Specifically, it was investigated whether individuals with higher levels of self-esteem benefited more from the gratitude intervention than participants reporting low self-esteem.

The results indicated that self-esteem may act as a moderator. Specifically, this study revealed that, self-esteem moderated the effect of the gratitude intervention on satisfaction with life on Day 12 (one week after the 3-day gratitude intervention). In addition, participants with low self-esteem experienced the largest increase in satisfaction with life. This finding suggests that, in contrast to the above predictions, the low self-esteem group (not the high self-esteem group) benefited the most from the gratitude intervention.

Furthermore, it was found that self-esteem moderated the effect of the gratitude intervention on participants' negative affect on Day 5 (one day after the 3-day gratitude intervention). However, also in contrast to the above predictions, it was revealed that the individuals with an average level of self-esteem (not a high level of self-esteem) benefited the most from the gratitude intervention, regarding their negative affect on Day 5. The fourth hypothesis was partially confirmed.

There was little evidence in previous literature focusing upon the mechanisms that may link the gratitude intervention to SWB. The present study is the first known research that has examined the influence of self-esteem.

Nevertheless, from Figure 1, it is noticeable that the group with low self-

esteem had also much lower satisfaction with life at the baseline in comparison to the baseline satisfaction with life reported by the average and high self-esteem groups. This pattern of findings is consistent with previous literature, stating that individuals with lower levels of self-esteem tend to be less satisfied with their lives, and high self-esteem is one of the most important predictors of life satisfaction (e.g. Hong & Giannakopoulos, 1994; Chen, Cheung, Bond, & Leung, 2006). In general, the present study revealed that the largest increase in satisfaction with life was observed among individuals with low self-esteem who also had noticeably lower satisfaction with life at the baseline.

In contrast, regarding the measure of negative affect, from Figure 2, we can observe that the individuals with an average level of self-esteem benefited the most from the gratitude intervention. The same individuals also began with higher levels of negative affect at the baseline in comparison to the low and high self-esteem groups. Therefore, the present study provided evidence that the greatest decrease in negative affect was found in the individuals with an average level of self-esteem who also had visibly higher levels of negative emotions at the baseline.

Strengths, Limitations, and Future Directions

This research adds to previous literature in several ways. It is the first study that has investigated the effectiveness of the gratitude intervention “three blessings” on a sample of UK individuals, and provided evidence that this intervention is beneficial in the UK cultural setting. Moreover, it is also the first known investigation that has attempted to examine self-esteem as a moderator. Furthermore, the advantage of the present study is the use of a more neutral

comparison condition (not a condition inducing negative feelings, such as listing hassles). Finally, unlike previous studies, participants in this study were asked to list their blessings online each day that the intervention took place. This enabled the researcher to closely monitor the intervention and to ensure that all participants truly performed their exercise. Most of the previous studies cannot confirm whether participants in fact practised the assigned gratitude interventions. Future research cannot disregard this important issue. Closer monitoring of gratitude interventions will ensure that the observed effects were obtained due to the intervention programme.

However, there are also some limitations that must be considered when interpreting the results of this research. First, a small number of participants in the present study might not be a representative sample of the UK population. Therefore, a replication with larger samples in future research may be useful to establish the generalisability of the current findings.

Second, it is worth noting that all reported significant effects of the gratitude intervention on SWB were of “trivial” effect sizes, according to categorization by Cohen (1992). Therefore, when considering the practical significance of the treatment effects, the improvement in participants’ scores on satisfaction with life, positive, and negative affect was very small. This suggests that the gratitude intervention might not be worth giving, because the improvement might not be big enough to produce meaningful change in people’s lives. On the other hand, this enhancement on satisfaction with life and negative affect was greatest in the low and average self-esteem groups. Therefore, the gratitude intervention may be of little practical significance to people with high self-esteem but of greater practical significance to those with low or average levels of self-esteem.

Perhaps, with possible dissimilar effects of the gratitude intervention on individuals with low, average, and high self-esteem, future researchers may need to develop separate intervention programmes to target people with different

levels of self-esteem. Indeed, researchers should stay sensitive to self-esteem as a moderator. In addition, it may also be necessary for future research to continue investigating other possible moderators that can influence the effectiveness of gratitude interventions on SWB.

Third, it should be noted that all participants in this study reported to be high on dispositional gratitude. Initially, the present study aimed to control for the influence of trait gratitude, as recommended by Chan (2010). However, median split used in previous research to differentiate participants high and low in dispositional gratitude did not seem to be an appropriate method, because of a low variability in trait gratitude scores in this study. Therefore, the influence of trait gratitude was not examined further. Chan (2010) found that only participants who were low in dispositional gratitude benefited from counting their blessings. Surprisingly, this study provides evidence that also the individuals reporting high levels of a grateful disposition can notably boost their SWB through engagement in the 3-day gratitude intervention programme. Nevertheless, it is interesting to consider why all participants in this study scored high on trait gratitude. One possible explanation may be that the Gratitude Questionnaire - 6 (GQ-6; McCullough et al., 2002) used to assess dispositional gratitude in the present study is not very sensitive to differences in trait gratitude, and a more sensitive measure needs to be developed in future. On the other hand, it is possible that a larger sample of participants would have resulted in a broader range of trait gratitude scores. Future research needs to investigate further if there is a differential effect of the gratitude intervention on participants with distinct levels of dispositional gratitude.

Fourth, another limitation might be that the present study was conducted entirely online. The internet was used for recruiting participants, for assessing participants on each day, for delivering the intervention, and for collecting data. However, despite this limitation, the given intervention seemed to work. Furthermore, previous research suggests that internet-based studies are as reliable

method of data collection as traditional studies. For instance, Gosling, Vazire, Srivastava, and John (2004) compared internet data with traditionally collected data. The authors concluded that: (a) the internet data are as diverse as the data collected via traditional methods; (b) participants who take part in internet-based studies are no more emotionally distressed than traditional participants; and (c) participants in Web-based research are just as likely to treat the study seriously as those participants in traditional research. Therefore, on the basis of these previous findings, the researcher decided to use the internet as a reliable method of data collection.

Conclusions

This study provided evidence that the 3-day gratitude intervention based on the count-your-blessings approach may be an effective technique for subjective well-being enhancement in the UK cultural setting. In addition, this intervention was found to be the most beneficial for the participants with low and average levels of self-esteem. Therefore, the possibility of differential effects of the gratitude intervention on participants with different levels of self-esteem cannot be disregarded in future research on gratitude.

Furthermore, given the effectiveness of the gratitude intervention in enhancing SWB, these findings may contribute to development of new cost effective interventions for use in therapeutic settings. Traditionally, psychotherapy used to be focused on relieving individuals' suffering. Today, this is changing, and a complete psychological well-being is now being considered as both: "the absence of mental illness and the presence of positive psychological resources, such as positive affect and satisfaction with life" (Sin, Della Porta, & Lyubomirsky, 2009; p. 2). Therefore, the gratitude intervention might have a

particular potential in psychotherapy concentrated on one's troubles, because it can turn people's attention away from negative aspects in their lives, and help them to experience greater happiness by concentrating on daily blessings.

Additionally, the easy nature of the "three blessings" intervention makes it simple to administer next to traditional techniques. According to Seligman, Steen, Park and Peterson (2005), "psychotherapy has long been where you go to talk about your troubles (...), psychology of the future may also be where you go and talk about your strengths" (p. 421). Nevertheless, in order to confirm the effectiveness of the gratitude intervention and convince psychologists to employ this strategy, further research needs to be undertaken.

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Appendix A: PARTICIPANT INFORMATION SECTION

EMOTION STUDY

INVITATION

You are being asked to take part in a research study on emotions. The main aim of this study is to explore how your emotions fluctuate in day-to-day life.

The study is being conducted by Magdalena Gilek, an MSc student at the University of Edinburgh. The project has been approved by the Psychology Research Ethics Committee.

WHAT WILL HAPPEN

In this study you will be asked to perform an emotion task and to complete a set of short questionnaires online.

The task you will receive is straight-forward and it will take you 5 min a day for 3 days to complete this task.

TIME COMMITMENT

This study takes typically 10 minutes (per day) across 6 days:

Day1 (now) – you will be asked to complete a set of short questionnaires **online** (it will take no longer than 10min in total)

Day2, Day3, and Day4 – you will be asked to perform an emotion task **online** (max. 5min a day), and you will be required to complete two (easy!) questionnaires **online** (max. 5min a day).

Day5 – you will be asked to complete some questionnaires **online** (max. 10min)

Day12 – you will be asked to complete a set of short questionnaires **online** (max. 10min)

Every day (Day1, Day2, Day3, Day4, Day5, and Day12) an email reminder will be sent to you with a link to follow in order to complete your daily emotion task and measures **online**.

PARTICIPANT'S RIGHTS

You may decide to stop being a part of this research study at any time without explanation. If you wish to withdraw from this study, please send the following email to the researcher: "I wish to withdraw from this study".

You also have the right to ask that any data you have supplied to that point be withdrawn by sending the following email to the researcher: "I wish to withdraw from this study and I wish the data I provided to this point to be deleted".

You have the right to omit or refuse to answer or respond to any question that is asked of you. You have the right to have your questions about the procedures answered (unless answering these questions would interfere with the study's outcome). **If you have any questions as a result of reading this information sheet, you should email the researcher (Magdalena Gilek) before the study begins.**

BENEFITS AND RISKS

There are no known risks for you in this study.

COST, REIMBURSEMENT AND COMPENSATION

Your participation in this study is voluntary.

CONFIDENTIALITY/ANONYMITY

Your name or email details will not be linked to your responses collected in the questionnaires, or to your performance on the emotion task. Instead, your name will be associated with a unique identifying number.

Individual participants will not be identified to anyone other than the researcher (Magdalena Gilek) at any stage in the research process. **The data will be used as a part of an MSc research project in psychology.**

FOR FURTHER INFORMATION

I (Magdalena Gilek) will be glad to answer your questions about this study at any time. You may contact me at M.M.Gilek@sms.ed.ac.uk

You may contact one of my Supervisors:

Dr Anne Finucane at a.finucane@ed.ac.uk

Dr Elizabeth Austin at elizabeth.austin@ed.ac.uk

If you want to find out about the final results of this study, you should contact me (Magdalena Gilek) after the 31st of August 2010.

INFORMED CONSENT SECTION

By clicking below, you are agreeing that: (1) you have read and understood the Participant Information Sheet, (2) questions about your participation in this study have been answered satisfactorily, (3) you are aware of the potential risks (if any), and (4) you are taking part in this research study voluntarily (without coercion).

Please click below if you consent to taking part in this study

I consent (button was available in the online version of this application).

Appendix B: Post-experiment Information Section

Dear Participant,

Thank you very much for taking part in this experiment.

The primary aim of this study was to examine the effect of a gratitude intervention on subjective well-being. You were randomly assigned to one of two study conditions, namely, a gratitude condition or a control condition. In particular, this experiment investigated whether expressing gratitude and concentrating on positive things in life can enhance your level of positive emotions and life satisfaction in comparison to a control condition.

I would like to offer the participants who were in the control condition the opportunity to obtain the instructions for the gratitude intervention. Therefore, if you would like to practise the gratitude intervention please read the Gratitude Intervention Instructions presented below.

The Gratitude Intervention Instructions

*There are many things in our lives, both large and small, that we might be grateful about. Think back over the past day, and write down three things in your life that you are grateful or thankful for.
Please practise the gratitude intervention for 3 consecutive days.*

If you have any further questions, please contact the researcher by email at M.M.Gilek@sms.ed.ac.uk

Thank you,

Magdalena Gilek.

Appendix C: Satisfaction With Life Scales

Below are five statements that you may agree or disagree with. Using the 1-7 scale below, indicate your agreement with each item.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. In most ways, my life is close to my ideal.							
2. The conditions of my life are excellent.							
3. I am completely satisfied with my life.							
4. So far, I have gotten the important things I want in my life.							
5. If I could live my life over, I would change nothing.							

Appendix D and Appendix E:**Positive Affect and Negative Affect Schedule, and Gratitude Adjectives Checklist**

Below are a number of words that describe different feelings and emotions. Read each item and using the 1-5 scale next to each word, indicate to what extent you feel this way **right now** (that is, at the present moment).

	Very Slightly or Not at All	A Little	Moderately	Quite a Bit	Extremely
1. Interested					
2. Appreciative					
3. Distressed					
4. Excited					
5. Upset					
6. Strong					
7. Guilty					
8. Scared					
9. Hostile					
10. Enthusiastic					
11. Proud					
12. Irritable					
13. Grateful					
14. Alert					
15. Ashamed					
16. Inspired					
17. Nervous					
18. Determined					
19. Attentive					
20. Jittery					
21. Active					
22. Afraid					
23. Thankful					

*Note. **Positive Affect adjectives:** interested, excited, strong, enthusiastic, proud, alert, inspired, determined, attentive, and active; **Negative Affect adjectives:** distressed, upset, guilty, scared, hostile, irritable, ashamed, nervous, jittery, and afraid; **Gratitude adjectives:** appreciative, grateful, and thankful.*

Appendix F: Gratitude Questionnaire

Read each of these 6 statements. Then using the 1-7 scale below, select the response that best describes how much you agree or disagree with each statement.

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Strongly Agree
1. I have so much in life to be thankful for.							
2. If I had to list everything that I felt grateful for, it would be a very long list.							
3. When I look at the world, I don't see much to be grateful for.							
4. I am grateful to a wide variety of people.							
5. As I get older, I find myself more able to appreciate the people, events, and situations that have been part of my life history.							
6. Long amount of time can go by before I feel grateful to something or someone.							

Appendix G: Rosenberg Self-esteem Scale

Below is a list of 10 statements dealing with your general feelings about yourself. Using the 1-4 scale below, indicate how much you agree or disagree with each statement.

	Strongly Agree	Agree	Disagree	Strongly Disagree
1. On the whole, I am satisfied with myself.				
2. At times, I think I am not good at all.				
3. I feel that I have a number of good qualities.				
4. I am able to do things as well as most other people.				
5. I feel that I do not have much to be proud of.				
6. I certainly feel useless at times.				
7. I feel that I am a person of worth, at least on an equal plane with others.				
8. I wish I could have more respect for myself.				
9. All in all, I am inclined to feel that I am a failure.				
I take a positive attitude toward myself.				

Appendix H: Demographic Questionnaire

Name:

Surname:

E-mail address:

Sex (please select):

- Male
- Female

Age:

Nationality (please select):

- UK
- non UK

Educational Status (please select):

- Undergraduate Student
- Postgraduate Student
- non Student

Appendix I: Gratitude/Control Group Scores on Subjective Well-Being Variables

	Experimental Condition					
	Gratitude Group		Control Group		Total	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Satisfaction With Life (Day1)	21.06	5.47	22.31	6.43	21.60	5.88
Satisfaction With Life (Day2)	23.09	4.52	22.54	7.40	22.85	5.90
Satisfaction With Life (Day3)	23.11	4.35	21.23	7.07	22.28	5.71
Satisfaction With Life (Day4)	23.15	5.02	21.62	6.57	22.48	5.74
Satisfaction With Life (Day5)	24.68	5.39	22.19	6.38	23.60	5.92
Satisfaction With Life (Day12)	24.7	4.35	21.96	6.72	23.50	5.62
Positive Affect (Day1)	29.00	8.44	27.08	7.98	28.17	8.23
Positive Affect (Day2)	31.53	8.16	27.54	8.55	29.80	8.50
Positive Affect (Day3)	29.94	7.47	27.38	7.31	28.83	7.45
Positive Affect (Day4)	30.29	7.47	27.15	7.66	28.93	7.65
Positive Affect (Day5)	29.97	9.32	27.46	7.97	28.88	8.78
Positive Affect (Day12)	30.03	6.42	26.85	6.64	28.65	6.65
Negative Affect (Day1)	16.59	5.54	14.08	2.77	15.50	4.69
Negative Affect (Day2)	14.97	5.55	15.12	4.51	15.03	5.08
Negative Affect (Day3)	13.94	3.84	15.19	5.09	14.48	4.43
Negative Affect (Day4)	13.50	3.84	15.00	5.18	14.15	4.49
Negative Affect (Day5)	14.53	4.93	15.31	4.86	14.87	4.87
Negative Affect (Day12)	14.76	5.89	14.69	3.72	14.73	5.03

Appendix J: Gratitude/Control Group Scores on State Gratitude, Self-Esteem and Trait Gratitude

	Experimental Condition					
	Gratitude Group		Control Group		Total	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
State Gratitude (Day1)	10.18	2.40	8.85	3.87	9.60	3.16
State Gratitude (Day2)	11.03	2.62	9.27	3.63	10.27	3.19
State Gratitude (Day3)	10.26	2.02	9.38	3.65	9.88	2.85
State Gratitude (Day4)	10.79	2.25	8.88	3.68	9.97	3.08
State Gratitude (Day5)	10.50	2.56	9.08	3.59	9.88	3.10
State Gratitude (Day12)	11.09	2.12	9.23	3.57	10.28	2.96
Self-esteem (Day1)	18.09	5.11	18.19	4.35	18.13	4.76
Self-esteem (Day5)	18.35	5.05	18.42	4.31	18.38	4.70
Self-esteem (Day12)	18.79	4.95	18.50	4.36	18.67	4.67
Trait Gratitude (Day1)	34.50	3.39	30.50	6.35	32.77	5.25
Trait Gratitude (Day5)	34.38	4.41	30.65	6.38	32.77	5.62
Trait Gratitude (Day12)	34.74	3.82	30.73	6.39	33.00	5.43

*Note. **Day 1** (one day before the 3-day intervention); **Day 2, Day 3, and Day 4** (immediately after the intervention at each day); **Day 5** (one day after the 3-day intervention); **Day 12** (one week after the 3-day intervention).*

Appendix K: Paired Samples T-Test for Satisfaction With Life within the Gratitude Group

Paired Samples T-Test						
		Paired Differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
Pair 1	Satisfaction With Life (Day1) - Satisfaction With Life (Day2)	-2.029	3.631	-3.259	33	.003**
Pair 2	Satisfaction With Life (Day1) - Satisfaction With Life (Day3)	-2.029	3.353	-3.529	33	.001**
Pair 3	Satisfaction With Life (Day1) - Satisfaction With Life (Day4)	-2.088	2.885	-4.220	33	.000***
Pair 4	Satisfaction With Life (Day1) - Satisfaction With Life (Day5)	-3.618	3.025	-6.973	33	.000***
Pair 5	Satisfaction With Life (Day1) - Satisfaction With Life (Day12)	-3.618	2.934	-7.190	33	.000***
Pair 6	Satisfaction With Life (Day4) - Satisfaction With Life (Day5)	-1.529	2.755	-3.237	33	.003**

***p<.001, **p<.01.

Appendix L: Paired Samples T-Test for Negative Affect within the Gratitude Group

Paired Samples T-Test						
		Paired Differences		t	df	Sig. (2-tailed)
		Mean	Std. Deviation			
Pair 1	Negative Affect (Day1) - Negative Affect (Day3)	2.647	3.583	4.307	33	.000***
Pair 2	Negative Affect (Day1) - Negative Affect (Day4)	3.088	4.647	3.875	33	.000***
Pair 3	Negative Affect (Day1) - Negative Affect (Day5)	2.059	3.757	3.195	33	.003**

***p<.001, **p<.01, *p<.05.